Wetlands: Mapping, Identification, and Field Verification

Webinar transcript
May 12, 2021, 3:00 – 4:30 pm

00:00:02.309 --> 00:00:09.628
All right, everyone, well I think we're going to get started. Hello, my name is Nate Nardi-Cyrus.

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00:00:09.628 --> 00:00:20.820
And I'm a conservation and land use specialist with the DEC Hudson River Estuary Program, through a partnership with Cornell University. And welcome to the 2nd session of our 3 part webinar series about wetlands.

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00:00:20.820 --> 00:00:35.670
This program is offered through a partnership between the Hudson River Estuary Program, Cornell University and Hudsonia. Today, our speakers will be presenting methods to help you remotely identify wetlands and how you should go about preparing for the subsequent site visit.

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00:00:37.590 --> 00:00:42.659
Okay, before we get started, let me quickly review a few important details.

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00:00:42.659 --> 00:00:51.659
You should be able to connect to the audio through your computer or by phone, and you can find different audio options at the bottom of the screen by clicking connect audio.

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00:00:51.659 --> 00:01:02.460
If you're having difficulties with audio through your computer, I recommend calling in by phone or requesting a callback. We've also put that call in number in the chat box.

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00:01:02.460 --> 00:01:16.769
Do you have any other difficulties? You should direct your questions via the chat box in the bottom, right corner of the screen. You should use the question and answer function to submit questions, not the chat, during the presentation.

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00:01:16.769 --> 00:01:29.879
Please do not use the chat again. I'm sorry to emphasize this point, but we want to make sure that we can have a more efficient question and answer process also note that your phone lines have been muted.

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00:01:29.879 --> 00:01:41.454
The webinar is being recorded, and we will notify you when that recording is available. At the end of the webinar, there will be a 3 question survey that pop up and we really appreciate your response and welcome any feedback on our programs.

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00:01:41.875 --> 00:01:49.584
And lastly for those seeking municipal training credit, you will receive an automated email from Webex at the end of the webinar certifying your attendance.

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00:01:51.000 --> 00:02:04.439
Okay, for those of you who may be new to the series, the Hudson River Estuary Program is a unique program at the New York State Department of Environmental Conservation established to help people enjoy, protect, and revitalize the Hudson River and its valley and

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00:02:04.439 --> 00:02:17.009
so our program works throughout the 10 counties bordering the tidal Hudson from upper New York harbor to the federal dam at Troy to achieve many key benefits that include clean water, community resilience to climate change,

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00:02:17.009 --> 00:02:22.979
the vital estuary ecosystem and its fish, wildlife, and habitats, natural scenery of the valley,

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00:02:22.979 --> 00:02:34.770
and opportunities for education, access, recreation, and inspiration on the river. I encourage you all to read our newly released State of the Hudson 2020 report for more information on our progress.

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00:02:36.745 --> 00:02:36.985
Okay,

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00:02:36.985 --> 00:02:38.155
within the Estuary Program,

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00:02:38.155 --> 00:02:52.974
our conservation and land use team works with municipalities and regional conservation partners to incorporate important habitats and natural areas into local and use planning and decision making. Our program has a website that's shown here and that's a clearing house for

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00:02:52.974 --> 00:02:53.485
guidance

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00:02:53.485 --> 00:02:59.425
and resources on all the topics that we're covering. My colleague, Ingrid is sharing these links right now, in the chat.

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00:03:01.705 --> 00:03:02.004
Okay,

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00:03:02.004 --> 00:03:05.875
we're offering this webinar series in honor of American wetlands month,

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00:03:05.905 --> 00:03:16.164
which was created by the US Environmental Protection Agency and its partners to celebrate the vital importance of wetlands to the nation’s ecology, economy,

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00:03:16.314 --> 00:03:17.155
social health,

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00:03:17.460 --> 00:03:22.259
and to educate Americans about the value of wetlands as a natural resource.

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00:03:22.259 --> 00:03:36.930
In addition May is also a great time to get outside and explore wetlands near you. I've already heard one story of someone visiting the Basha kill wetlands, and they're in Sullivan county, after listening to last week's webinar. So, I hope you're all inspired to do the same after today.

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00:03:39.115 --> 00:03:52.735
Okay, this is the 2nd session in our wetland series, and we hope that you return for the last section, which is going to be next week. I note that each section was created to stand alone. And all of the recorded sessions will eventually be available for viewing through our website at the end of the series.

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00:03:53.365 --> 00:03:59.664
Last week we learned about the different types of wetlands their values and possible threats and conservation strategies.

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00:04:00.354 --> 00:04:12.805

We had quite a bit of conversation surrounding turtle crossings, and since then the DEC has issued a statement urging drivers to watch out for turtles in the road, because they are active during this time of year. And I'm sure many of you are interested.

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00:04:12.805 --> 00:04:15.655
So, Ingrid is sharing the link to that press release in the chat now.

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00:04:17.365 --> 00:04:29.725
Next week May 19th, we're going to be exploring existing state and federal regulatory protections for wetlands as well as local laws and other strategies that can filling the gaps to further protect these critical resources.

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00:04:29.725 --> 00:04:35.634
And we'll share the link to the page where you can register and also share it in some of our follow up communications.

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00:04:37.853 --> 00:04:52.403
Okay, so our 1st presenter today will be Ingrid Haeckel, my fellow conservation and land use specialist at the Estuary program. She provides land use training tools and technical assistance to Hudson Valley communities to promote conservation of important natural areas.

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00:04:52.913 --> 00:05:03.504
And prior to her work at the Estuary program, Ingrid worked as a biologist and biodiversity mapping coordinator at Hudsonia. After Ingrid’s talk, we'll have some time for a few questions.

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00:05:03.774 --> 00:05:16.343
And then we'll follow that with a couple of presentations by Gretchen Stevens, director of the biodiversity resources center at Hudsonia and with that I'm going to pass the ball over to Ingrid. So, give me just a quick second.

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00:05:22.108 --> 00:05:25.798
Okay.

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00:05:28.918 --> 00:05:35.699
Take it away Ingrid.

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00:05:38.728 --> 00:05:42.269
You’re unmute now.

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00:05:42.269 --> 00:05:49.283
Ingrid Haeckel: Thank you. You see my slides. Nate Nardi Cyrus: you're ready to go. Ingrid Haeckel: All right. Thank you.

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00:05:50.124 --> 00:05:58.194
Well, good afternoon, everyone and thanks for joining us today, I'll be introducing existing wetland maps and some additional resources

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00:05:58.463 --> 00:06:05.574
you can use to identify other potential wetland locations in particular by using soil maps and air photos.

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00:06:06.233 --> 00:06:21.084
And as Nate alluded in his introduction, I did quite a bit of this type of mapping in a prior position and it's very fun. I encourage you to practice and use this technique.

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00:06:22.704 --> 00:06:33.774
So, I'll begin with a brief overview of the two main sources of existing wetland mapping that we use in New York, the National wetland inventory and freshwater wetland maps.

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00:06:34.103 --> 00:06:47.814
And then I'll tell you about how to access soil map data and air photos, and how they can be used to predict the occurrence of wetlands. And throughout the presentation, I'll point out how you can access this information through different online tools.

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00:06:48.144 --> 00:06:59.874
And after my talk, Gretchen will tell you about how topographic maps can be used, and putting this whole process together where she'll run through some examples of applying the identification method.

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00:07:02.153 --> 00:07:05.694
But first off for those of you who are in volunteer positions,

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00:07:05.934 --> 00:07:07.343
or are new to this topic,

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00:07:07.494 --> 00:07:13.314
keep in mind that you don't need to become a wetland delineation expert to carry out your roles,

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00:07:13.764 --> 00:07:17.903
nor is it reasonable to expect that you will but nevertheless,

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00:07:18.504 --> 00:07:22.283
we hope that the skills we're discussing today will be useful to you,

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00:07:22.524 --> 00:07:24.564
they take some time to learn and practice,

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00:07:25.163 --> 00:07:26.934
but if you're just getting started,

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00:07:26.963 --> 00:07:31.853
we'll help you come away with some ideas of what to look out for and the types of questions to ask.

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00:07:31.853 --> 00:07:38.603
And when you may want to request the services of a trained professional in wetland identification.

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00:07:38.908 --> 00:07:45.598
Nate Nardi Cyrus: Ingrid really quick. It looks like you have some windows that are blocking the presentation right now.

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00:07:45.598 --> 00:07:50.249
Sorry about that. Thanks. Is that better? Uh, yep that's better. Thank you.

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00:07:50.514 --> 00:07:51.264
Ingrid Haeckel: All right, great.

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00:07:52.704 --> 00:08:05.754
So, I'll be referring to the Hudson Valley Natural Resource Mapper throughout the presentation and this is an interactive online mapping tool that's available from the Hudson River Estuary program through the DEC's website.

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00:08:06.113 --> 00:08:18.863
Many of the data sets that we'll discuss are available through this mapping tool. I'm not going to go into detail about how to use the mapper, but we do have a recorded webinar that walks you through it.

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00:08:19.434 --> 00:08:25.884
And as I'm going along, Nate is also going to share these links for this and other tools in the chat box.

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00:08:26.244 --> 00:08:38.634
This talk is geared toward non GIS users, but if you have access to GIS, that of course, opens up many other options for data sources and overlays that can facilitate

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00:08:38.969 --> 00:08:41.999
this approach.

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00:08:42.953 --> 00:08:57.624
Okay, so the most comprehensive source of wetland mapping both nationally, and in the Hudson Valley is the National wetlands inventory or NWI and this is a product of the US Fish and Wildlife Service.

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00:08:57.894 --> 00:09:04.193
The NWI mapping program began out of a requirement of the wetland resources acts back in 1986,

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00:09:04.193 --> 00:09:12.624
and it continues to evolve to this day. The maps are being updated over time the image on the left shows original NWI

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00:09:12.624 --> 00:09:13.673
paper maps,

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00:09:13.703 --> 00:09:19.524
which were created using topographic quadrangle maps as a base map.

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00:09:21.479 --> 00:09:22.464
But today,

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00:09:22.464 --> 00:09:24.894
most of this information has been digitized,

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00:09:24.894 --> 00:09:30.833
and it's readily available through different platforms and online interactive maps,

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00:09:31.374 --> 00:09:32.364

including the Hudson Valley

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00:09:32.364 --> 00:09:38.724
Natural Resource Mapper shown on the right. And it may also be available for example,

72
00:09:38.724 --> 00:09:41.813
through your county parcel viewer or other services.

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00:09:42.354 --> 00:09:49.764
And for those of you who are in other parts of New York state, the NWI maps are available through the DEC's Environmental Resource Mapper as well.

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00:09:51.053 --> 00:10:03.114
Currently, NWI mapping is almost entirely complete for the Hudson Valley region, with the exception of a small area in southern Albany and northern Greene counties. So be aware of that

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00:10:03.114 --> 00:10:06.053
if you live near there or working here there.

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00:10:06.533 --> 00:10:13.644
And the existing maps were produced at a scale of 1 to 24,000 using air photos from the 1990s and 2000s,

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00:10:13.644 --> 00:10:14.033
at least,

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00:10:14.033 --> 00:10:15.864
for this part of New York,

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00:10:15.864 --> 00:10:18.474
along with topographic maps and soil surveys,

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00:10:18.474 --> 00:10:20.724
it's important to note that,

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00:10:20.724 --> 00:10:21.144
NWI,

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00:10:21.144 --> 00:10:25.134
maps do not depict the limits of federal wetland jurisdiction,

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00:10:25.134 --> 00:10:30.114
which we'll talk more about in our next webinar on May 19th.

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00:10:30.114 --> 00:10:37.254
They also tend to miss many of the smaller dryer wetlands and often inaccurately map wetland boundaries.

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00:10:42.568 --> 00:10:56.423
NWI classifies wetlands according to a scheme that incorporates the water regime and that refers to the frequency and duration of standing water, as well as vegetation cover and several other variables.

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00:10:56.724 --> 00:10:59.394
And each wetland is then given a code.

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00:10:59.754 --> 00:11:00.323
You can,

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00:11:00.683 --> 00:11:06.323
you can use the NWI website to decipher that code,

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00:11:07.374 --> 00:11:10.644
but for your basic purposes nowadays,

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00:11:10.974 --> 00:11:12.984
these in the online maps,

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00:11:13.014 --> 00:11:17.484
the NWI data are classified by general habitat type,

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00:11:17.484 --> 00:11:29.933
and this allows us to basically look at some different estuarine or tidal wetland types versus freshwater wetlands including emergent wetlands,

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00:11:29.933 --> 00:11:34.734
such as marshes and forested or shrub wetlands,

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00:11:34.734 --> 00:11:39.053
including swamps. And it also displays open water

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00:11:39.053 --> 00:11:39.683
habitats,

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00:11:39.683 --> 00:11:42.744
including ponds and lakes and riverine habitats.

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00:11:43.104 --> 00:11:54.024
And again, if you'd like a refresher on different wetland habitat types in the Hudson Valley, please refer back to our webinar last week on May 5th.

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00:11:54.509 --> 00:11:59.938
So the next set of maps, I'll discuss are DEC's

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00:11:59.938 --> 00:12:14.214
freshwater wetland maps for New York state, and these have an important function in determining the State’s jurisdiction over wetlands under Article 24 of New York state environmental conservation law. In general

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00:12:14.214 --> 00:12:28.884
DEC maps only show wetlands that are 12.4 acres or larger. It's equivalent to 5 hectares. There are some exceptions where smaller wetlands had been designated as of unusual, local importance. Most

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00:12:28.884 --> 00:12:32.153
DEC wetland maps were created

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00:12:34.048 --> 00:12:47.339
in the early 1980s through remote interpretation of air photos, soil maps, and topographic maps, and they were only ever intended to depict the approximate boundary of the regulated wetlands.

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00:12:47.339 --> 00:13:00.778

35 years later, these wetland boundaries tend to be fairly inaccurate and for that reason that the map on the left is showing an original map, on the right this is the same

104
00:13:00.778 --> 00:13:02.274
data shown in the Hudson Valley

105
00:13:02.274 --> 00:13:08.183
Natural Resource Mapper, includes this lighter green wetland check zone around the,

106
00:13:08.303 --> 00:13:12.563
the regulated wetland and when a project is proposed in,

107
00:13:12.744 --> 00:13:14.333
or near one of these areas,

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00:13:14.813 --> 00:13:23.903
typically a DEC wetland biologist will go out in the field to determine the accurate jurisdictional boundary of the wetland and the 100 foot adjacent area.

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00:13:26.994 --> 00:13:41.453
Of course, inaccuracies in wetland maps and changes in wetlands over time have also resulted in instances where there are wetlands that are currently greater than 12.4 acres that do not show up on the jurisdictional map.

110
00:13:41.453 --> 00:13:53.604
If you run into an instance of this, I've been told you can discuss it with a regional DEC wetland biologist to see whether any other state jurisdiction may apply.

111
00:13:58.224 --> 00:14:06.173
So, this is just a comparison of the map on the left and map on the right for the same area that we've been looking at.

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00:14:06.443 --> 00:14:19.823
You can see that the DEC map omits small wetlands, and the boundaries are fairly different. The NWI picks up many other wetlands here and it's probably more accurately drawn.

113
00:14:23.994 --> 00:14:38.303

NWI maps and DEC maps, unfortunately, both have limitations though and some communities have developed, more accurate, local maps through high resolution, habitat mapping, including many towns in Duchess county in the Hudson Valley.

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00:14:38.573 --> 00:14:44.303
And Gretchen and her colleagues at Hudsonia have led these projects and have trained many local volunteers

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00:14:44.303 --> 00:14:56.214
in habitat mapping skills. I'll also note that New York City Department of Environmental Protection has also created more accurate wetland maps for the city's drinking water supply watersheds.

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00:14:57.024 --> 00:14:57.864
Local mapping,

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00:14:57.864 --> 00:14:59.754
combined with field verification,

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00:14:59.754 --> 00:15:01.823
such as the example on the left,

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00:15:02.153 --> 00:15:10.583
reveals that many of the wetlands mapped by NWI and DEC are larger and shown than what is shown on the,

120
00:15:10.734 --> 00:15:14.004
the prior existing maps and the boundaries are different.

121
00:15:14.339 --> 00:15:27.869
And other maps are other wetlands rather are missing entirely from both the NWI and DEC maps. So, this is why it's important to look beyond the existing wetland maps and to verify wetlands in the field.

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00:15:27.869 --> 00:15:31.558
Nate Nardi Cyrus: Ingrid, I'm sorry to bother you again, but.

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00:15:31.558 --> 00:15:38.399
The, there's, it's blocking at the title now, the drop down. Yeah.

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00:15:38.399 --> 00:15:43.438
So, that's that's fine now as long as the drop down doesn't come.

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00:15:43.438 --> 00:15:50.369
Because then it obscures the title. Ingrid Haeckel: I don't know how it just paused and now.

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00:15:50.369 --> 00:15:55.798
Present okay. Yep. I can't get that thing to go away.

127
00:15:57.448 --> 00:16:04.614
It's weird there. Is that better? Nate: Yep, that looks great. Ingrid: Sorry for the Webex troubles.

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00:16:05.453 --> 00:16:05.933
Okay,

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00:16:05.933 --> 00:16:08.933
so before I move on to remote wetland,

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00:16:08.933 --> 00:16:09.923
identification,

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00:16:09.923 --> 00:16:10.854
I want to mention one

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00:16:10.854 --> 00:16:11.783
other set of maps,

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00:16:13.014 --> 00:16:27.833
and these are for tidal wetlands and the state on the left and New York State has official regulatory maps of tidal wetlands and these are restricted to marine areas south of the

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00:16:27.864 --> 00:16:28.283
Tappen Zee

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00:16:28.283 --> 00:16:37.433

bridge and were produced in the 1970s. You can access the images of those maps through the GIS clearing house. For the Hudson River Estuary,

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00:16:38.214 --> 00:16:48.744
A tidal wetland inventory was completed in 2007, and that's shown here in the Hudson Valley, natural resource mapper and it shows a pretty detailed breakdown of tidal wetland, habitat types.

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00:16:48.744 --> 00:16:53.663
It's a little bit outdated at this point but but still pretty good.

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00:16:55.078 --> 00:17:03.568
So, I'll transition now to introduce map analysis to remotely identify wetlands.

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00:17:03.568 --> 00:17:12.239
This is the same general method that's used to create the NWI and DEC wetland maps and is used more

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00:17:12.239 --> 00:17:24.868
broadly for habitat mapping, but I'm going to focus on just the basic overview of identifying wetlands, using soil maps, air photos and then Gretchen will be talking about topographic maps.

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00:17:25.888 --> 00:17:34.259
I want to emphasize the importance of field verification, and ultimately on the ground wetland delineation

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00:17:34.259 --> 00:17:48.894
for jurisdictional determinations and site level planning. The method we're describing here can be used to create sketch maps and identify where additional potential wetlands may be located or to identify the more accurate

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00:17:48.923 --> 00:17:50.364
existing wetland boundary.

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00:17:50.933 --> 00:18:01.493
But ultimately, it's necessary to verify wetlands in the field field and confirm the presence of the hydrology, wetland soils and vegetation characteristics.

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00:18:01.828 --> 00:18:08.038

And Gretchen will talk a little bit more about preparing for and conducting site visits at the end of the webinar.

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00:18:09.624 --> 00:18:22.134
So, I'll begin with county soil survey maps. These are available from the U. S. D. A natural resource conservation service and they're a great source of information for predicting the location of potential wetlands.

147
00:18:22.614 --> 00:18:26.183
This is a snapshot on the left of an original

148
00:18:27.328 --> 00:18:40.979
paper soil map, but the data are now readily available through the web soil survey, which is an online mapping portal, and can be downloaded.

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00:18:40.979 --> 00:18:53.519
And for those of you who are in the Hudson Valley region, we've added the wetland soil classes to the Hudson Valley Natural Resource Mapper shown here.

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00:18:56.304 --> 00:19:07.554
And in particular, we recommend looking at soil drainage classification, which refers to the frequency and duration of periods when soil is saturated with water.

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00:19:08.304 --> 00:19:19.223
The natural resource mapper shows the location of soils in these bottom 3 classes, ranging from somewhat poorly drained to very poorly drained soils.

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00:19:19.703 --> 00:19:29.423
Poorly and very poorly drained soils are indicated as probable wetland areas and they largely correspond to the hydric soil classification,

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00:19:29.723 --> 00:19:32.213
which are commonly referred to as wetland soils.

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00:19:32.814 --> 00:19:39.473
But keep in mind that you'll also often find unmapped wetlands in somewhat poorly drained areas.

155
00:19:40.134 --> 00:19:53.334

And those areas are not always classified as hydric. So you can access this information more detail about the soil unit by clicking on the map and pulling up the pop up window,

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00:19:53.604 --> 00:19:57.773
which will tell you the name of the soil and even give you a link to the soil survey.

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00:20:00.023 --> 00:20:11.513
So, again, this is the same area we've looked at, and showing the NWI on the left. DEC wetlands in the middle and those 2 combined with the soil map on the right.

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00:20:12.054 --> 00:20:24.834
And you can see that soils cover a much greater extent than the existing mapped wetlands. This definitely does not mean that the entire area of these soil units are wetlands.

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00:20:25.463 --> 00:20:35.243
Rather, it's a good area to flag and look for additional wetlands as we move along to looking at air photos and topographic maps.

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00:20:36.209 --> 00:20:45.983
Keep in mind that soil units are typically only mapped to an accuracy of about 2 acres, and they can be variable within a single unit.

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00:20:46.344 --> 00:20:56.784
So there's some variability and they often don't pick up very small wetlands, like vernal pools or intermittent woodland pools.

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00:20:57.088 --> 00:21:05.848
However, together with the air photos and topographic maps, soils are a very good starting point for remotely identifying wetlands.

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00:21:07.973 --> 00:21:22.344
Right. So when we 1st started training volunteers and have had mapping techniques, we relied largely on stereoscopic air photo prints shown on the left, which allow you to view air photos in 3 dimensions.

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00:21:22.854 --> 00:21:31.614
They're still used in some places. But we're fortunate now to have very easy access to high resolution aerial imagery through the Internet.

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00:21:32.009 --> 00:21:44.638
New York state produces 6 inch to 1 foot resolution imagery. That's generally updated every 3 to 4 years and available online through a variety of different mapping tools

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00:21:44.963 --> 00:21:45.894
and services,

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00:21:46.284 --> 00:21:50.993
and these photos are commonly referred to as digital Orthoimagery,

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00:21:51.263 --> 00:22:02.453
which means that the image is have been digitally manipulated or Ortho-rectified to remove distortion from camera tilt and terrain relief.

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00:22:02.453 --> 00:22:13.433
And that helps create a uniform scale. And basically, that means that you can overlay other mapped spatial information on top of these photos and have an accurate map.

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00:22:16.104 --> 00:22:21.624
People nowadays are much more used to looking at air photos because of the availability of services,

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00:22:21.624 --> 00:22:27.114
like Google Maps and Google Earth and others that and they,

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00:22:27.594 --> 00:22:31.884
those services commonly use images in true color,

173
00:22:31.973 --> 00:22:46.403
the way it's visible to our human eye taken leaf on during the growing season, so that's an example here in the kind of the bottom left and many people prefer these images for aesthetic reasons.

174
00:22:46.403 --> 00:22:47.003
Perhaps,

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00:22:47.513 --> 00:22:47.993
however,

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00:22:47.993 --> 00:22:49.943
for wetland identification,

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00:22:49.973 --> 00:22:58.554
you really want to use imagery that's taken in the leaf off season outside of the growing season when,

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00:22:58.614 --> 00:23:04.493
when you can see beneath the forest canopy and see what's going on on the ground much better.

179
00:23:04.888 --> 00:23:09.328
And that's this example, kind of in the middle here.

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00:23:09.594 --> 00:23:20.513
And true color leaf-off imagery from the New York state Orthoimagery program is readily available through a variety of different services.

181
00:23:21.564 --> 00:23:35.993
And if you happen to be using GIS software, you can download that imagery and display it differently to look at it in color infrared. Because the imagery taken nowadays with four bands, it includes that color and infrared band.

182
00:23:37.644 --> 00:23:47.453
And this is really the provides the greatest amount of contrast and is superior for identifying wetlands and other surface water features,

183
00:23:48.294 --> 00:23:53.272
Color infrared photos are taken by recording both the visible light spectrum,

184
00:23:53.693 --> 00:24:02.574
what we can see, as well as near infrared light, which is invisible to our eye. The Infrared spectrum is then displayed in red

185
00:24:02.969 --> 00:24:03.953
and since the near

186
00:24:03.953 --> 00:24:05.753
infrared spectrum picks up

187
00:24:05.784 --> 00:24:08.364
reflections from photosynthetic activity,

188
00:24:08.903 --> 00:24:17.064
anything a photo that appears bright red is likely some kind of actively growing vegetation during that early spring time,

189
00:24:17.394 --> 00:24:17.663
late,

190
00:24:17.663 --> 00:24:17.903
March,

191
00:24:17.933 --> 00:24:20.003
early April when these photos are taken.

192
00:24:20.338 --> 00:24:26.909
That might be conifer trees or things like lawns or hay fields, for example.

193
00:24:28.284 --> 00:24:37.584
So, this sequence is just showing, reinforcing the differences between these different types of air photos. It's a sequence from Norrie Mills state park in duchess county.

194
00:24:38.784 --> 00:24:46.044
So, this is a true color leaf on imagery, something like what you might see in Google Maps or Google Earth and.

195
00:24:46.798 --> 00:24:52.108
You can see a lot of forest, but you can't really tell what's going on underneath the tree canopy.

196
00:24:52.108 --> 00:25:03.269
In contrast, this next image is showing a true color leaf off image and you can see a lot more detail and

197
00:25:03.269 --> 00:25:10.798
you might notice these small, dark spots in the forest and these are, in fact, small wetlands.

198

00:25:11.874 --> 00:25:24.384
And the last image here is showing the same shot in color infrared, and the water appears black here. It's, there's greater contrast, which helps the wetlands pop out more.

199
00:25:24.683 --> 00:25:35.634
And, and these red fluffy things are probably pine trees or maybe Hemlock trees. And you can pick out the growing lawns and other vegetation.

200
00:25:35.999 --> 00:25:49.888
So this is a summary of some of the key signatures that we look for that are indicators of wetland vegetation when you're looking at a true color leaf off

201
00:25:49.888 --> 00:26:02.159
photo, I'm going to focus on those because those are the photos that are most readily available through the Orthoimagery program's viewing.

202
00:26:02.159 --> 00:26:07.284
software and online tools. So in general,

203
00:26:07.284 --> 00:26:09.503
you're looking for kind of dark areas,

204
00:26:09.503 --> 00:26:13.584
dark patches on the landscape that are consistent with topo

205
00:26:13.584 --> 00:26:15.804
graphic basins or flat areas,

206
00:26:16.134 --> 00:26:21.564
which Gretchen will be talking about shortly with the topographic maps and poorly drained soils.

207
00:26:21.983 --> 00:26:32.634
So, you kind of trying to triangulate these 3 pieces of information. Flat black or navy blue areas are generally open water bodies lakes or ponds.

208
00:26:33.743 --> 00:26:38.634
If you can pick out the texture of trees in a black ish area,

209
00:26:38.634 --> 00:26:42.834
that's probably a swamp and small,

210
00:26:42.864 --> 00:26:52.104
dark spots in a forest or those can be possible woodland pools or vernal pools. Where you have white speckled,

211
00:26:52.104 --> 00:26:54.564
vegetation in an open water area,

212
00:26:54.564 --> 00:26:59.094
that's an indication of marsh. and wait, where you have mottled,

213
00:26:59.548 --> 00:27:09.898
spotted looking herbaceous vegetation may be an indication of wet meadow, especially where combined with the soil indicators.

214
00:27:11.038 --> 00:27:17.939
So, I'll run through a couple of examples. So, here, we're looking at a forested area

215
00:27:18.834 --> 00:27:33.564
and kind of this, you can see it light brown, there's sort of, if you zoomed in even closer, you'd see the the trees look almost like match sticks, like little lines on the landscape. Those are the tree trunks. You know, this is what

216
00:27:33.564 --> 00:27:36.594
An upland hardwood forest looks like from an air photo.

217
00:27:38.844 --> 00:27:48.054
And in addition you might pick out these small, dark spots and these are probably intermittent woodland pools or vernal pools.

218
00:27:48.773 --> 00:27:56.814
But there are other larger dark areas that that are still under the forest canopy.

219
00:27:57.118 --> 00:28:01.648
And those are probably hardwood swamps and again, not.

220
00:28:01.648 --> 00:28:12.179
Hardwood swamp is generally larger than a than vernal pool, and may in many cases, be connected to another surface water outlet.

221
00:28:12.179 --> 00:28:18.689
This large, flat, dark water body here is probably a lake or a pond.

222
00:28:18.689 --> 00:28:20.753
It's open water. Okay.

223
00:28:20.753 --> 00:28:22.554
So in this next example,

224
00:28:22.554 --> 00:28:24.624
we're looking at the edge of a lake,

225
00:28:24.773 --> 00:28:39.384
and here you can see the open water and leading out to a channel that's draining this lake and there's a gradient from open water where you see this sort of speckled white area

226
00:28:39.384 --> 00:28:44.993
along it and blotchy areas and those are probably most likely marsh.

227
00:28:44.993 --> 00:28:46.644
I know this area is marsh.

228
00:28:48.179 --> 00:29:02.124
Cattail vegetation tends to look like that. You can kind of see the dark water peeking through it and that in turn. It may be hard to tell, but there's sort of a transition here from marsh to hardwood swamp.

229
00:29:02.423 --> 00:29:08.304
And you may even be able to pick out the texture, the sort of fluffy appearance of the tree tops here.

230
00:29:08.669 --> 00:29:21.628
In comparison over here in the upper right corner, the dry ground is much lighter colored background and, and you can still pick out the forest cover.

231
00:29:24.983 --> 00:29:28.223
I find wet meadows to be somewhat tricky.

232
00:29:28.223 --> 00:29:28.433
So,

233
00:29:28.433 --> 00:29:29.963
I include this next example,

234
00:29:30.294 --> 00:29:35.903
it's often fairly evident where you have kind of a wetter area within a hay field,

235
00:29:35.903 --> 00:29:37.403
or a cultivated field,

236
00:29:37.733 --> 00:29:44.453
because of the lack of overall texture and the vegetation. These areas tend not to have much vegetation in the spring

237
00:29:44.453 --> 00:29:57.384
because they've been plowed or harvested and in the prior year and so the saturated soils really stand out here. So this is kind of a wetter area of this field. Probably.

238
00:29:58.798 --> 00:30:13.703
In contrast a wet meadow that is not cultivated will often occur bright white like this and have sometimes has a more blotchy or less uniform texture and

239
00:30:13.703 --> 00:30:17.933
that's because of the remnants of the prior year’s vegetation,

240
00:30:18.564 --> 00:30:21.203
including things like reed Canary grass,

241
00:30:21.203 --> 00:30:28.013
which invasive and grows quite abundantly in many of these areas and has a high reflectances of light.

242
00:30:28.013 --> 00:30:29.993
So that's why it's appearing kind of white here.

243
00:30:30.449 --> 00:30:33.598
In contrast.

244
00:30:33.598 --> 00:30:42.028
This area over here, showing my cursor, appears darker. You can kind of see, there's some standing water there. That's probably a marsh.

245
00:30:42.028 --> 00:30:47.699
And if you're having troubles, you know, I really…

246
00:30:47.699 --> 00:30:57.689
Using the soils data in conjunction with the air photos will help identify where these wet meadow places may occur.

247
00:30:59.304 --> 00:31:12.384
And here's one last example of a large wetland complex in a floodplain and there's the dark stream channel itself. And that is surrounded by wet meadows.

248
00:31:12.384 --> 00:31:20.753
You kind of see the splotchy low vegetation there and that grades into a marsh on this side, which is darker.

249
00:31:20.753 --> 00:31:29.963
And that's because there's some standing water probably up here, it looks like this is probably a swamp. I can pick out the tree canopy.

250
00:31:30.209 --> 00:31:38.878
And this transition area, I'm not really sure where the wetland ends or begins, and that's again a good

251
00:31:38.878 --> 00:31:43.769
example of why it's important to go out and verify these places in the field.

252
00:31:43.769 --> 00:31:47.308
The boundaries are not always very clear.

253
00:31:48.898 --> 00:32:01.284
So, just a reminder that you can use the Hudson Valley Natural Resource Mapper to view the aerial imagery. That's under the base map options in the upper right corner of the screen.

254
00:32:01.284 --> 00:32:10.044
The default is a topographical view, but you can pull down and look at aerials. And that is pulling up the most recent Orthoimagery for this area from New York state.

255
00:32:10.409 --> 00:32:23.669
From here, you can also use the print map function, which is under tools. You can turn on the parcel boundaries and you can create yourself a nice little field sheet that you could take out with yourself on a

256
00:32:23.669 --> 00:32:29.548
site visit, or use as the base map for a sketch of a potential wetland.

257
00:32:29.548 --> 00:32:40.888
So that's just a reminder to disable any pop up blockers you may have in your browser in order to print that map out to PDF.

258
00:32:43.374 --> 00:32:47.483
Another website you can use to access air photos is Discover GIS Data

259
00:32:47.544 --> 00:32:59.903
New York and this is another part of the GIS Clearinghouse that can be used to view Orthoimagery dating back to 1994 and note that the ‘94 and 2001 imagery at least for much of the Hudson Valley is available in color

260
00:32:59.903 --> 00:33:01.223
infrared,

261
00:33:01.223 --> 00:33:02.784
and that again provides higher contrast,

262
00:33:03.144 --> 00:33:12.233
makes it easier to see those wetlands, and you're looking for again those dark areas and remember that the growing vegetation will

263
00:33:14.878 --> 00:33:29.663
look pink or red, so this is just an example of 2001 imagery and on the right hand side of the screen, you can expand the Orthoimagery and you can click on the different sets of Orthophotos from different years.

264
00:33:29.663 --> 00:33:40.824
So one tip is to look at the same location over time through different sets of photos and see if that wetland signature is continually present.

265
00:33:40.824 --> 00:33:50.874
And that can add further evidence to your sketch map. And this site also includes tax parcels, which you can turn on.

266
00:33:53.513 --> 00:34:01.253
So, in summary, if you're trying to identify wetlands on a site, I recommend by starting out by looking at the existing and NWI and DEC

267
00:34:01.253 --> 00:34:09.684
wetland maps and then looking at the soil data to identify possible or probable wetland areas based on drainage classification.

268
00:34:10.463 --> 00:34:20.273
At that point, it's probably a good time to bring in the topographic maps, which Gretchen will talk about next and then look at air photos for those wetland signatures.

269
00:34:20.483 --> 00:34:33.893
And you can use a printed air photo to print out and create sketch map from, identifying those potential wetland locations and then take that out with you ideally,

270
00:34:34.344 --> 00:34:40.554
for a site visit to verify the presence of those wetlands based on field indicators.

271
00:34:42.414 --> 00:34:56.902
Just another tip, this may be a lot to take in, but one good way to practice this method is to find a place near you that you're familiar with, that has a variety of wetland types,

272
00:34:57.324 --> 00:35:02.034
whether it be swamps and vernal pools and marshes or wet meadows.

273
00:35:03.143 --> 00:35:05.514
And then look at the aerial imagery,

274
00:35:05.574 --> 00:35:08.903
go back home and on your computer study

275
00:35:08.903 --> 00:35:21.293
that aerial imagery for that area, and that can help you begin to become more familiar with what these signatures look like and what they correspond to within an on the ground location.

276
00:35:23.634 --> 00:35:37.614
Gretchen will be telling you next about topographic maps, and just a quick note that you can access topo Quadrangles using the National Map, which is an online tool from the U. S. Geological Survey.

277
00:35:38.003 --> 00:35:50.603
They are available under base maps. That's this little icon with the 4 squares up here. Many other mapping services also include the national map as an optional base map. So keep an eye out for it.

278
00:35:50.818 --> 00:36:04.108
Your county parcel viewer may have even more detailed contour lines available, so also check that. We have a list of county web maps available on our website, too.

279
00:36:04.108 --> 00:36:10.469
And I think with that, if there's time, I'll be happy to answer

280
00:36:10.469 --> 00:36:14.128
a few questions before we move on to Gretchen's presentation.

281
00:36:14.128 --> 00:36:24.298
Thank you. Nate Nardi Cyrus: It's great. Thank you so much. Do you have a few questions? Let me just pull them up.

282
00:36:29.278 --> 00:36:42.329
Okay, if the project is proposed on a parcel, identified as having a DEC wetland, does the state provide the boundary confirmation? Or is that up to the property owner to pay for something like that?

283

00:36:42.329 --> 00:36:53.398
My understanding is that a DEC biologist will go out and delineate the jurisdictional wetland.

284
00:36:53.398 --> 00:36:57.748
However, I don't work for that program, so I

285
00:36:57.748 --> 00:37:02.579
direct any questions to DEC environmental permits.

286
00:37:02.579 --> 00:37:06.088
Nate Nardi Cyrus: Okay, great. We have another question.

287
00:37:06.088 --> 00:37:12.748
Are you now using GPS locations in conjunction with field sketches? Not quite sure.

288
00:37:12.748 --> 00:37:16.168
What you mean by that, Francis,

289
00:37:16.168 --> 00:37:21.418
if you want to clarify a little bit, is the question about using GPS?

290
00:37:21.418 --> 00:37:27.059
Yes, so just talking about all that, Ingrid Haeckel: yes, if you are,

291
00:37:27.059 --> 00:37:35.458
I assume if you're using GPS, you may also be using G. I. S., geographic information systems mapping software,

292
00:37:35.574 --> 00:37:38.634
and when I was doing this work professionally,

293
00:37:38.903 --> 00:37:53.304
we would definitely bring GPS points into our GIS projects where we had the sketch map of the wetland boundaries and we would use GPS points to help refine the wetland boundaries on

294
00:37:54.054 --> 00:37:54.864
our maps.

295
00:37:55.134 --> 00:37:55.764
So.

296
00:37:56.728 --> 00:38:01.978
I definitely recommend using GPS if you're

297
00:38:01.978 --> 00:38:06.148
working on a wetland map.

298
00:38:06.148 --> 00:38:10.048
Uh, it's very helpful.

299
00:38:10.048 --> 00:38:23.309
Nate Nardi Cyrus: That's great. Okay. I have another question. This is a GIS-related question. I have the Ortho maps on my ArcGIS, and I see several color layers. Is that color? Or is that red infrared?

300
00:38:24.750 --> 00:38:29.250
Ingrid Haeckel: You have you see several color layers.

301
00:38:29.250 --> 00:38:35.099
Nate: Yeah, that's all it says so it might be worth connecting directly.

302
00:38:35.099 --> 00:38:40.860
Ingrid Haeckel: Yeah, questions about if about displaying

303
00:38:40.860 --> 00:38:51.059
Ortho photos to view them in color infrared, I can follow up by email or you could shoot me an email and I can give you that information.

304
00:38:52.230 --> 00:39:00.420
Nate Nardi-Cyrus: Okay, um, another question, interesting question how do manmade pond fit into this?

305
00:39:00.420 --> 00:39:05.610
Ingrid Haeckel: Yeah, so those are

306

00:39:05.610 --> 00:39:09.659
considered water bodies my understanding is

307
00:39:09.659 --> 00:39:16.019
that ponds are not always considered wetlands or open water areas, because they don't have

308
00:39:16.019 --> 00:39:27.420
vegetation necessarily, but we're also often mapping ponds in the process of mapping wetlands and they

309
00:39:27.420 --> 00:39:32.010
they are included in that classification system.

310
00:39:32.010 --> 00:39:38.579
And, of course, ponds do often have some wetland vegetation at along the margins.

311
00:39:39.204 --> 00:39:45.385
and shallower areas. Nate: and I'll make 1 more point as far as aerial interpretation.

312
00:39:45.505 --> 00:39:55.764
Usually not always, but in some cases, you can see kind of a linear feature when you look at a manmade pond, where you can see a berm, any kind of straight line

313
00:39:55.764 --> 00:40:06.385
usually, that's the, that you can see from the air usually indicates that something is has at least been modified by people. So if you see something that's kind of a cleared area that looks

314
00:40:06.659 --> 00:40:16.380
kind of like, it should be at the outlet or inlet and it's a, or the outlet and it's, uh, it's straight that that might indicate that it's a manmade pond.

315
00:40:16.885 --> 00:40:25.195
Ingrid Haeckel: Yeah, and I guess just to clarify that question too, I think it really if whether something's considered or not really depends on your purposes.

316
00:40:25.525 --> 00:40:38.695
And what, you know, why you're doing this mapping what you're trying to map, if this is within a regulatory context. In many cases, ponds are not necessarily regulated under these laws.

317
00:40:39.445 --> 00:40:43.644
But there may still be reasons to map a podn, to know that it's there.

318
00:40:44.909 --> 00:40:57.864
Nate Nardi Cyrus: So, okay, well, it's 340. so, I think we're going to have to call it from here. That's been great questions. But you can always feel free to reach out directly to Ingrid and we might even have some time at the end. So, to get to your questions.

319
00:40:57.864 --> 00:41:02.155
But thank you, Ingrid next, I'm going to pass the ball over to.

320
00:41:03.269 --> 00:41:08.849
Gretchen, and if Gretchen, you want to get your presentation ready.

321
00:41:09.295 --> 00:41:18.954
Just want to give her a quick introduction for those that need it. Gretchen Stevens is the director of biodiversity resources,

322
00:41:18.954 --> 00:41:29.275
the Biodiversity Resources Center at Hudsonia, a nonprofit environmental research and education institute based in dutchess county. Gretchen has over 35 years of experience as a field biologist.

323
00:41:29.275 --> 00:41:40.315
And has been a long time partner in delivering educational programs with the Hudson River Estuary program to local land use decision makers throughout the Hudson Valley. With that I'll pass it on to you, Gretchen.

324
00:41:41.039 --> 00:41:49.469
Gretchen Stevens: Okay, thank you. Nate. Can you hear? Can you hear me okay ? Nate: Yep, I can hear you and I can see the visuals.

325
00:41:49.469 --> 00:42:04.260
Gretchen Stevens: Great. So, hello everyone, I'm going to talk a lot about interpreting topography to identify wetlands.

326
00:42:04.260 --> 00:42:11.130
Remembering that as Ingrid mentioned, many wetlands do not show up on public maps.

327
00:42:11.130 --> 00:42:18.420
But I'll demonstrate how to find many of the unmapped wetlands using topographical maps.

328
00:42:18.420 --> 00:42:24.445
If this was an in person workshop, we'd give you a chance to practice these techniques on a map of your own.

329
00:42:24.445 --> 00:42:35.965
But instead I'll just walk us through the exercise in a methodical way and hope you'll be able to gather and use these techniques.

330
00:42:36.269 --> 00:42:45.780
Many of you, I'm sure are accustomed to using USGS topographical maps for hiking and orienteering. And maybe for other purposes.

331
00:42:45.780 --> 00:42:58.139
And some of you may also be accustomed to seeing elevation contour lines on site plans, and subdivision plats and other drawings for proposed land development projects.

332
00:42:58.139 --> 00:43:04.530
But you may not have used the topography, especially to find unmapped wetlands.

333
00:43:05.934 --> 00:43:12.835
Elevation contour lines indicate many characteristics of the terrain, places that are higher and lower in the landscape,

334
00:43:13.255 --> 00:43:26.965
the aspect of a hillside, steep slopes, gentle slopes, flat areas, benches, swales, basins. You can use the contours to predict where water is likely to collect and flow.

335
00:43:27.144 --> 00:43:28.465
Even where ponds,

336
00:43:28.710 --> 00:43:32.099
wetlands and streams have not been explicitly mapped.

337

00:43:32.724 --> 00:43:46.974
Each contour line indicates points of equal elevation in the landscape and neighboring contour lines are spaced at a standard elevation distance on each map on a site plan like this one,

338
00:43:47.280 --> 00:43:50.340
The contour interval is often 2 feet.

339
00:43:50.340 --> 00:43:56.244
That's what it is on this map on the topographical map. On the USGS topographic map in the 7.5 minute series,

340
00:43:56.244 --> 00:44:06.474
the contour interval will be 10 feet or 3 meters in much of the landscape, but 20 feet or 6 meters on a quadrangle where there is a lot of steep terrain.

341
00:44:07.710 --> 00:44:21.210
I think the maps that USGS has produced in the last couple of decades or so have been in English units, instead of, I'm sorry, have been in metric units instead of English units

342
00:44:21.210 --> 00:44:28.230
Typically, a few of the contour lines are labeled with the actual elevation above sea level.

343
00:44:28.230 --> 00:44:35.039
This line, for example, is at 960 feet where I've, where I've drawn that blue Oval.

344
00:44:35.039 --> 00:44:38.159
At 960 feet above sea level.

345
00:44:38.159 --> 00:44:41.250
And this one is at 950 feet.

346
00:44:41.250 --> 00:44:49.349
Thus, if you're moving from west to east, left to right between those two lines on the land, you'd be moving downhill.

347
00:44:49.349 --> 00:44:55.260
Remembering that each contour line indicates a point of equal elevation.

348
00:44:55.260 --> 00:45:02.369
On this site map, if you're walking on a path along this countour line that I'm tracing in red.

349
00:45:04.380 --> 00:45:08.880
You'd be at a constant elevation of 960 feet above sea level.

350
00:45:08.880 --> 00:45:13.079
This map has two foot contour intervals so if you turn, right

351
00:45:13.079 --> 00:45:24.960
and walked down to the neighboring contour line and follow it south then you'd be walking at a constant elevation of 958 feet on a hillside, just 2 feet below the first line.

352
00:45:24.960 --> 00:45:30.840
On our maps, the elevation contour lines.

353
00:45:30.840 --> 00:45:35.519
Where the elevation contour lines are.

354
00:45:35.519 --> 00:45:40.079
Uh, closer together that indicates steeper slopes.

355
00:45:40.079 --> 00:45:46.710
Gentler slopes or flat areas are indicated where the contour lines are farther apart.

356
00:45:46.710 --> 00:45:54.599
So, here in the upper right is an area of steep slopes that I've circled in orange and here's another steep area in the lower right

357
00:45:54.599 --> 00:46:00.840
And over here on the left is an area of gentler slopes where the contour lines are far apart.

358
00:46:00.840 --> 00:46:05.250
And here's another flatish area above there.

359
00:46:07.139 --> 00:46:15.900

This is an aerial view, orthophoto of a fairly dramatic forested landscape.

360
00:46:15.900 --> 00:46:28.434
There's a road running north to south through the center of the image with a few fields near the road, and the road appears to be flanked by hills that rise steeply on each side. In some places.

361
00:46:28.434 --> 00:46:34.135
Just by the shadows, you can detect where there a steep slopes and swales and ravines and summits.

362
00:46:34.530 --> 00:46:40.349
And here's a topographic segment of the same area.

363
00:46:41.460 --> 00:46:46.349
In this close up of the topographic maps, several streams are mapped with blue lines.

364
00:46:46.349 --> 00:46:51.329
Notice the shape of the contour lines in the vicinity of those streams.

365
00:46:51.329 --> 00:46:59.280
The streams all occur in places where there are these series of V shaped contours with the vees pointing up slope.

366
00:46:59.280 --> 00:47:02.460
Yeah.

367
00:47:02.460 --> 00:47:07.619
That is the basic signature of a stream on a topographic map.

368
00:47:07.619 --> 00:47:17.099
Here the streams happened to be mapped, but on other map segments that same configuration of lines can lead you to streams that have not been mapped.

369
00:47:18.480 --> 00:47:30.389
Here's an example of a different USGS topographical map segment to find unmapped streams here first, you'll need to figure out which areas are higher and which are

370
00:47:30.389 --> 00:47:42.000

lower on the map. We can see from the couple of labeled elevations that the land is high in the Northwest quadrant at 550 feet and higher.

371
00:47:42.000 --> 00:47:47.639
And lower to the South, Southeast there is a contour labeled 400 feet.

372
00:47:47.639 --> 00:47:58.590
Finding those few labeled contour lines is usually the quickest way to tell what is high and what is low in your map and you can extrapolate to other parts of the map.

373
00:48:01.769 --> 00:48:08.639
In the southern part of this map, there is one mapped stream shown as a blue line on the lower part of this hillside.

374
00:48:08.639 --> 00:48:15.900
But from the contour lines elsewhere, I will guess that there are several unmapped streams in this map segment.

375
00:48:15.900 --> 00:48:23.340
Starting in the northeast corner at the upper right I predict a stream right here. I'm drawing it in green.

376
00:48:23.340 --> 00:48:30.869
And another one, right here. You see that I'm drawing the stream through this series of V shaped contour lines.

377
00:48:31.949 --> 00:48:36.239
And the v's are pointing uphill and that's very important.

378
00:48:36.239 --> 00:48:42.329
And another stream here, running into this depression, which is probably an unmapped pond.

379
00:48:42.329 --> 00:48:52.889
At the southern stream that was already mapped in blue see, that the V shaped lines continue farther uphill from the map stream. So I'm guessing.

380
00:48:52.889 --> 00:48:56.219
that the stream actually starts way up here.

381
00:49:00.300 --> 00:49:05.130
Here's another map segment.

382
00:49:05.130 --> 00:49:10.860
That shows four knolls. I've drawn arrows to the high points.

383
00:49:10.860 --> 00:49:15.210
And we see this broad basin between the knolls.

384
00:49:15.210 --> 00:49:19.199
V shaped contour lines

385
00:49:19.199 --> 00:49:24.630
indicate a stream here draining into this basin.

386
00:49:24.630 --> 00:49:36.840
And V shaped contour lines, streaming out of the basin. With a stream draining into and out of this space, it's a perfect place to find a wetland.

387
00:49:36.840 --> 00:49:45.090
Even though this map doesn't have a wetland symbol here and no wetland appears on other public maps of this location.

388
00:49:45.090 --> 00:49:48.269
I would draw the wetland

389
00:49:48.269 --> 00:50:00.179
looking something like that. Wetlands do sometimes occur on hillside slopes but the most obvious places to look for wetlands are in basins,

390
00:50:00.179 --> 00:50:03.570
and on floodplains, on hillside benches,

391
00:50:03.570 --> 00:50:15.570
and in other flattish areas, where water is likely to collect. So look for places where the contour lines are fairly far apart, indicating level or gently slope terrain.

392
00:50:15.570 --> 00:50:20.820
These places can be small, it can be on a hillside. They really can be anywhere.

393
00:50:21.684 --> 00:50:26.364
This segment shows a stream flowing East to West, right

394
00:50:26.364 --> 00:50:37.554
To left on this map ,and these arrows show the areas where the contour lines are widely spaced, indicating the broad flattish areas of the stream's flood plain.

395
00:50:39.000 --> 00:50:46.559
These are another kind of area where you might find wetlands, floodplains, often, hold both wetland and non-wetland habitats.

396
00:50:49.585 --> 00:51:02.574
One more topographical signature that can help you find wetlands is this: wherever you see what looks like lots of little unmapped streams close together giving the contour lines a scalloped appearance,

397
00:51:02.724 --> 00:51:10.135
this is likely to be a seepy hillside. There are probably many seeps and springs feeding these crowded little streams.

398
00:51:10.500 --> 00:51:22.230
Seeps that flow long enough to support hybrid vegetation are wetlands. So this is another place to look for unmapped wetlands and these can occur on quite steep slopes.

399
00:51:22.230 --> 00:51:27.059
So don't ignore this signature if you're looking for wetlands in the landscape.

400
00:51:29.605 --> 00:51:42.085
And here's another topographics map section for you to contemplate. We would ordinarily give you this on paper and have you find and draw all the unmapped areas for potential wetlands that you can.

401
00:51:42.385 --> 00:51:45.414
But instead I'll just walk through the process on screen.

402
00:51:45.900 --> 00:5149.440

The contour interval on this map is 6 meters.

403
00:51:49.440 --> 00:52:00.420
Or, about 20 feet. That is each contour line depicts places that are 20 feet in elevation higher and lower than the neighboring contour lines.

404
00:52:01.284 --> 00:52:15.144
So, first remember to figure out which places are high and which are low in different parts of the map. There are a few labeled contour lines that'll give you some clues. Also remember that the land rises on.

405
00:52:15.480 --> 00:52:24.119
either side of the mapped streams and their floodplains. So a stream, and its floodplain will always be lower than the places on either side.

406
00:52:24.119 --> 00:52:29.010
I've exaggerated the streams that are already mapped.

407
00:52:29.010 --> 00:52:33.059
So, here's the floodplain along the stream in the

408
00:52:33.059 --> 00:52:37.619
part of this image, and this may also be part of the floodplain.

409
00:52:37.619 --> 00:52:41.340
Here's a knolltop.

410
00:52:41.340 --> 00:52:45.659
And here and here are 2 other summits.

411
00:52:45.659 --> 00:52:49.380
And there are streams running down through the ravines between these hills.

412
00:52:49.380 --> 00:52:57.480
Picking out a few features, like this can help you visualize the landscape and read the highs and lows in other parts of the map.

413
00:52:57.480 --> 00:53:04.230

So, I'm going to draw in red some examples of my own stream delineations.

414
00:53:04.230 --> 00:53:10.050
There's one running down there.

415
00:53:11.190 --> 00:53:25.885
Another one running in the opposite direction. There are a few more. I'm drawing all of these right down through those series of v patterns in the contour lines with v's pointing uphill.

416
00:53:26.219 --> 00:53:31.679
Silence.

417
00:53:31.679 --> 00:53:37.739
And here are all the streams that I found on this map.

418
00:53:38.789 --> 00:53:42.239
We need to

419
00:53:42.239 --> 00:53:51.204
visit this place in the field to see which of these streams are actually there and which of them are merely little dips in the landscape.

420
00:53:51.565 --> 00:53:58.344
But I would bet that most or all of these are actually substantial enough to consider them streams.

421
00:53:58.710 --> 00:54:05.369
Knowing where the streams are, and where they are flowing, can help you figure out some of the places where wetlands may occur.

422
00:54:05.369 --> 00:54:11.969
Some streams originate in wetlands and some streams flow through or adjacent to wetlands.

423
00:54:11.969 --> 00:54:17.550
But also remember that many wetlands are entirely unassociated with streams.

424
00:54:17.550 --> 00:54:21.630
I've turned all those red lines blue.

425
00:54:21.630 --> 00:54:25.050
And here's how I would begin to draw some wetlands.

426
00:54:25.050 --> 00:54:36.420
Of course, this broad flat area along the stream in the south is likely to contain some floodplain wetlands. Although the entire floodplain is not necessarily wet.

427
00:54:36.420 --> 00:54:41.429
Here's a possible wetland on a bench of this hillside.

428
00:54:41.429 --> 00:54:45.150
And here's one on another bench.

429
00:54:45.150 --> 00:54:53.880
Up here in the in the upper left, this broad flat area near that stream looks suspicious to me for wetland.

430
00:54:53.880 --> 00:55:01.079
In this area, too, in fact, this area seems to have two streams, draining out of it.

431
00:55:01.079 --> 00:55:04.260
Here are several more.

432
00:55:04.260 --> 00:55:07.980
Uh, where I would draw potential wetlands.

433
00:55:09.869 --> 00:55:16.829
Take a minute to see if you find other places that are likely to hold wetlands.

434
00:55:16.829 --> 00:55:23.519
Uh, we'll give you, you know, half a minute or so to to look this over and see what you come up with.

435
00:55:24.960 --> 00:55:32.250
Oops, sorry there. I didn't mean to do that.

436
00:55:46.590 --> 00:55:49.980

Silence.

437
00:56:03.809 --> 00:56:08.760
Silence.

438
00:56:08.760 --> 00:56:15.750
Silence.

439
00:56:15.750 --> 00:56:20.639
So, how would you do.

440
00:56:20.639 --> 00:56:24.630
Going to show you all the wetlands that I found here.

441
00:56:24.630 --> 00:56:28.079
Silence.

442
00:56:29.429 --> 00:56:37.199
Now, we don't know which of these places are actually wetlands.

443
00:56:37.199 --> 00:56:43.320
But these are the places that I'd want to visit to see, which are wetlands, and which are not.

444
00:56:46.199 --> 00:56:54.090
And finally, here's a topographic map of a part of the Millbrook Preserve in New Paltz.

445
00:56:54.090 --> 00:57:02.369
I want to use the same kind of analysis to find the places where unmapped wetlands might occur.

446
00:57:03.389 --> 00:57:13.170
For this site, we also have a map showing a wetland area in dark green that shows up on the National Wetland Inventory map.

447
00:57:13.170 --> 00:57:21.360
And where the soils map indicates probable and possible wetlands.

448

00:57:21.360 --> 00:57:30.150
These are where the map soils are classified as poorly or very poorly drained, the probable wetlands.

449
00:57:30.150 --> 00:57:42.360
You can see these map layers on the Hudson Valley Natural Resource Mapper for any site that you are interested in.

450
00:57:44.545 --> 00:57:47.454
We also have an aerial photo of this site.

451
00:57:47.815 --> 00:58:02.664
This whitish area along the northern part of the stream looks like wetland to me but other areas in this fairly dark photo don't especially jump out at me one way or another for wetland

452
00:58:02.695 --> 00:58:03.684
identification.

453
00:58:03.989 --> 00:58:12.780
You can use both those, the map and the aerial photo if they're helpful.

454
00:58:12.780 --> 00:58:19.829
But you may find that the topography will give you many of the best clues about unmapped wetlands and streams.

455
00:58:21.119 --> 00:58:32.969
Here are those three resources together. Notice that some of the areas mapped as wetland on the National wetland inventory map the dark green and the upper left mapped matches

456
00:58:32.969 --> 00:58:35.969
the whitish area on the aerial photo.

457
00:58:35.969 --> 00:58:42.030
And also matches the broad flat area along the stream on the topo map.

458
00:58:42.030 --> 00:58:48.269
And the poorly drained soil area below the dark green wetland,

459

00:58:48.269 --> 00:58:56.070
Also seems to match the area of widely spaced contours on on this tributary stream on the topographic map.

460
00:58:56.070 --> 00:59:03.420
Also, the area of poorly drained soil on the left side of the map on the upper left,

461
00:59:03.420 --> 00:59:10.050
matches this other area of widely spaced contour lines on the topo map.

462
00:59:13.735 --> 00:59:27.925
And that's how you might use the, the soils map, the existing wetland map, and the aerial photo in conjunction with the topographic map to help identify wetlands.

463
00:59:28.320 --> 00:59:40.440
But let's start by finding all the unmapped streams on this site. The streams shown in blue are from the National Hydrography dataset of the US GS and are drawn fairly coarsely, so

464
00:59:40.440 --> 00:59:44.369
they don't track the contour lines very closely.

465
00:59:44.369 --> 00:59:49.019
So just ignore that imprecision for this exercise.

466
00:59:49.019 --> 00:59:56.489
You'll notice on this segment that there are no labels indicating the elevation above sea level on any of these lines.

467
00:59:56.489 --> 01:00:01.889
So, how else would you figure out which areas are higher and which areas are lower?

468
01:00:01.889 --> 01:00:07.500
You need to know that, in order to predict which areas are likely to collect and carry water.

469
01:00:07.500 --> 01:00:16.590
Remember that streams are always at lower elevations than the land that is immediately adjacent to the stream and it's floodplain.

470
01:00:16.590 --> 01:00:28.170
Of course, streams can occur at high elevations and on high steep hillsides, but always the land immediately flanking the stream will be at a higher elevations than the stream itself.

471
01:00:28.170 --> 01:00:34.829
So, in this map, much of the map stream lengths

472
01:00:34.829 --> 01:00:40.559
run through these broad flat areas that appear to be the floodplains of those streams.

473
01:00:41.034 --> 01:00:55.284
I say that because the contour lines are widely spaced along the streams, indicating flat or gently sloped terrain. And when you see this along a stream, it is typically a current or former floodplain, which often

474
01:00:55.704 --> 01:00:58.945
but not always will contain wetlands.

475
01:01:00.599 --> 01:01:09.539
You can be sure that the land rises instead of dropping on either side of those floodplains. Here are several high points.

476
01:01:14.215 --> 01:01:20.094
You can use this general logic to understand the highs and lows on other parts of this site.

477
01:01:20.545 --> 01:01:29.364
And that can help you find the unmapped streams, the basins, the benches, the other places where water is likely to collect and flow.

478
01:01:29.699 --> 01:01:35.280
Here's where I would predict are many of the unmapped streams.

479
01:01:35.280 --> 01:01:38.519
One there over on the left.

480
01:01:38.519 --> 01:01:43.860
Here are several others over in the upper right.

481
01:01:43.860 --> 01:01:47.760
Down in the lower right.

482
01:01:51.900 --> 01:01:56.340
Left.

483
01:01:56.340 --> 01:02:00.570
One down just to the rest of that initial stream.

484
01:02:00.570 --> 01:02:12.869
Then to delineate wetlands, I'd begin by mapping the broad floodplain along these main streams like, so.

485
01:02:12.869 --> 01:02:23.309
I've outlined in red, then I look for other likely areas, both along the streams and isolated from them. Here are just a few examples.

486
01:02:27.960 --> 01:02:39.510
I'd like you to take a minute, or maybe it'll be just half a minute to look over this map and find areas where you think wetlands are likely.

487
01:02:39.510 --> 01:02:43.289
And then we'll come back together and I'll show you what I found on this site.

488
01:02:43.289 --> 01:02:46.739
Silence.

489
01:03:15.449 --> 01:03:21.239
So

490
01:03:21.239 --> 01:03:25.079
There are all the wetlands

491
01:03:25.079 --> 01:03:33.000
or potential wetland areas that I found on the site, I hope these match some of the places that you were identifying.

492

01:03:34.349 --> 01:03:42.150
So, while we have the aerial photo on the left and the wetland and hydric soil map on the right,

493
01:03:42.150 --> 01:03:45.179
give you a clue as to where to find some of the wetlands,

494
01:03:45.179 --> 01:03:49.829
the topographic map actually gives you much more information.

495
01:03:51.510 --> 01:03:56.699
So, how can you put this exercise to use?

496
01:03:57.534 --> 01:04:03.684
You can use this mapping technique in addition to a field visit to discover unmapped

497
01:04:03.684 --> 01:04:07.344
wetlands and streams when reviewing a proposed development site,

498
01:04:07.344 --> 01:04:08.094
for example,

499
01:04:08.394 --> 01:04:14.125
or when you are planning a use or management of a site for other purposes.

500
01:04:14.460 --> 01:04:28.739
Remember that aerial photo images and wetland soils for any site are available to you on the Hudson Valley Natural Resource Mapper that Ingrid showed you. And the link is in the chat box.

501
01:04:30.000 --> 01:04:43.199
On this site, since I made these delineations on the map, I had the opportunity to see several of these areas on the ground and kind of test that they were wetlands.

502
01:04:43.199 --> 01:04:58.110
But some of these places are probably not wetlands and I can't emphasize enough the importance of field visits, not only to determine which of your predicted wetlands and streams are actually there,

503
01:04:58.110 --> 01:05:05.460

but also to discover other things about a site that are not evident from remote analysis of maps and aerial photographs.

504
01:05:05.460 --> 01:05:17.579
This is especially important for those of you who are on planning boards or zoning boards or conservation advisory councils, and are reviewing proposed new uses of the land.

505
01:05:20.369 --> 01:05:25.920
For any of you who conduct environmental reviews

506
01:05:25.920 --> 01:05:29.610
of land development projects

507
01:05:29.610 --> 01:05:41.579
At the local or state level, if you are in any other positions of planning for development, or management of the land area, we strongly encourage you to visit every site.

508
01:05:41.579 --> 01:05:47.369
A site visit can open your eyes to important features that are not evident on maps alone.

509
01:05:47.369 --> 01:05:52.019
And are not necessarily conveyed to you by a landowner or an applicant.

510
01:05:52.019 --> 01:05:56.789
Purposes of field visits are several:

511
01:05:56.789 --> 01:06:08.039
Certainly to identify important natural features that cannot be detected remotely, also to assess the character and quality of wetlands and other habitats,

512
01:06:08.039 --> 01:06:18.150
to assess the jurisdictional status of features such as streams and wetlands. That is, “Do they qualify for local state or federal protection?”

513
01:06:18.150 --> 01:06:28.320
And to assess the potential impacts from proposed land uses, which are often easier to envision when you're standing on the ground instead of looking at maps.

514
01:06:29.849 --> 01:06:33.389
Before a field visit for research purposes,

515
01:06:33.894 --> 01:06:35.844
you should prepare by first

516
01:06:35.844 --> 01:06:45.355
analyzing topographic maps and soils maps and aerial photos in the ways that we've just been discussing to identify potential unmapped

517
01:06:45.355 --> 01:06:47.304
Wetlands, streams or other features,

518
01:06:47.304 --> 01:06:51.085
such as steep slopes, ledges, or other special habitats.

519
01:06:51.510 --> 01:07:02.730
Acquaint yourself with local laws, regulations that might be relevant to the site. I think if there is a local wetland protection ordinance, for example.

520
01:07:02.730 --> 01:07:06.599
What are the minimum criteria for jurisdiction?

521
01:07:06.599 --> 01:07:10.710
What are the setback requirements? What are the use limitations?

522
01:07:10.710 --> 01:07:15.210
Figuring out what questions need to be answered in the field.

523
01:07:16.530 --> 01:07:24.480
And then planning your field itinerary so that you can officially get around to all the important places to answer those questions.

524
01:07:24.480 --> 01:07:30.090
This is especially important for large sites where, you know, you will be unable to see everything.

525

01:07:31.170 --> 01:07:42.114
Bring site plans, other site maps, topographical maps and other relevant documents that might provide useful information while you're there. The camera is always handy.

526
01:07:42.114 --> 01:07:46.554
In case you need to illustrate some significant features for your colleagues

527
01:07:47.010 --> 01:07:51.179
who are not there or for reports or memos on your findings.

528
01:07:51.179 --> 01:07:54.690
When you're on the site,

529
01:07:54.690 --> 01:08:02.244
have the applicant, the land owner, or their representatives show you the locations and limits of proposed developed features.

530
01:08:02.545 --> 01:08:10.525
This is much better than trying to figure those things out yourself and also have them explain proposed mitigation for adverse impacts if needed.

531
01:08:10.800 --> 01:08:14.820
Be sure, uh, to see the whole site.

532
01:08:15.445 --> 01:08:19.585
Not just the development footprint if it's a 5 acre site,

533
01:08:19.585 --> 01:08:29.574
and the proposed development is only on 2 acres, look at the rest of the site too because there may be features such as wetlands or streams that are outside the development footprint,

534
01:08:29.574 --> 01:08:31.045
or on neighboring properties

535
01:08:31.465 --> 01:08:33.295
that would be affected.

536

01:08:33.720 --> 01:08:41.970
And because plans might change and the development footprint might shift to other areas before the project plan is final.,

537
01:08:43.109 --> 01:08:51.479
be sure to see all the places of interest and potential concern, not just the places that the applicant wants you to wants to show you.

538
01:08:52.710 --> 01:09:02.250
Now if you're concerned about wetlands, for example, look closely at how the upland areas are supporting those wetlands.

539
01:09:02.250 --> 01:09:06.539
And consider how the proposed land uses might alter that relationship.

540
01:09:06.539 --> 01:09:11.039
And take photos to document features of interest.

541
01:09:11.039 --> 01:09:16.409
And take notes that will help you describe your observations to your colleagues later on.

542
01:09:16.409 --> 01:09:22.829
If you're not confident about your ability to recognize wetlands,

543
01:09:22.829 --> 01:09:28.260
and that can be difficult in some cases, bring someone who's knowledgeable.

544
01:09:28.260 --> 01:09:35.369
On the Hudsonia web site are some plant indicator guides and habitat fact sheets that can help you.

545
01:09:35.369 --> 01:09:38.670
Links to those, I believe, are in the chat box.

546
01:09:40.015 --> 01:09:47.604
A precise delineation of wetlands usually requires the expertise of a wetland specialized specialist.

547
01:09:47.604 --> 01:10:00.685

So, as mentioned, your job as a planning board member or a member or land manager, or other such positions is not to do that delineation or even to recognize all the wetlands.

548
01:10:01.050 --> 01:10:10.619
But we hope you will have gained enough from this webinar series to know, at least how to ask some important questions. And, when to call in an expert.

549
01:10:10.619 --> 01:10:19.920
Even better than just taking some field notes is to write up a brief report on your observations.

550
01:10:19.920 --> 01:10:31.314
At a minimum the report should include, for example, the date of the site visit, the names of attendees, weather conditions or site conditions that might affect your observations.

551
01:10:31.314 --> 01:10:44.364
And that would be things like deep snow or drought conditions or it's just rained or something. And any observations that might be relevant to the impacts of the project under review.

552
01:10:44.909 --> 01:10:59.845
Especially list the questions that you posed, as you prepared for the site visit and any answers based on your onsite observations. Are there any wetlands or streams that did not appear on the applicant's maps?

553
01:11:00.149 --> 01:11:09.600
If so describe them briefly, their, their spatial relationship to the proposed development features, and the likelihood of impacts.

554
01:11:09.600 --> 01:11:18.029
Are there other sensitive features that deserve attention such as large old trees, or ledges for example, that might be harmed by new disturbance.

555
01:11:18.029 --> 01:11:21.899
Or might pose a difficulty for developing the site.

556
01:11:21.899 --> 01:11:27.840
We encourage you to.

557
01:11:27.840 --> 01:11:28.319

Uh,

558
01:11:28.465 --> 01:11:34.885
to view a video of a virtual field trip that we took to the Millbrook Preserve,

559
01:11:35.364 --> 01:11:43.765
and in which we visit some of the potential wetland areas that we were delineating a few minutes ago on this site.

560
01:11:44.395 --> 01:11:58.435
The link to the video is in the chat box. It's about 40 minutes long and so we hope you all will do that after this webinar is over.

561
01:11:58.770 --> 01:12:03.029
So, I'm not sure how we're doing on time, but

562
01:12:03.029 --> 01:12:10.199
it looks like we do have some time for questions and I'd be very happy to answer them.

563
01:12:11.939 --> 01:12:18.114
Nate Nardi Cyrus: That was great Gretchen. Thank you so much. Yeah, we do have some questions and we have plenty of time to answer those.

564
01:12:18.114 --> 01:12:27.414
So, I encourage folks to use the question and answer box to submit any of their questions and you can direct those to either Gretchen or Ingrid.

565
01:12:28.404 --> 01:12:40.435
So, I'm going to just start out with one. Getting back in Gretchen, rather to the, the topo maps and how you were identifying wetlands on those based on the flat areas that you noted.

566
01:12:41.274 --> 01:12:45.654
There's a question as to how, you know, how, how wide.

567
01:12:45.989 --> 01:12:50.159
is an area before you think it's a wetland or just a flat

568

01:12:50.159 --> 01:12:55.680
piece of forest. Is this something based on your personal experience? Or is there some kind of rule of thumb here?

569
01:12:55.680 --> 01:13:06.539
Gretchen: I would have to say there is no rule of thumb at all and many flat places are not wet.

570
01:13:06.539 --> 01:13:19.229
But there are places that are sort of characteristic parts of the landscape if, if they are at the

571
01:13:19.229 --> 01:13:32.430
Say right at the foot of a hill, the toe of a slope where they might be receiving a lot of water. If it's a flat place on a little bench on a hillside that looks like it might be receiving water and holding it there

572
01:13:32.430 --> 01:13:36.659
before the water spills over and runs farther down the hill.

573
01:13:37.435 --> 01:13:45.534
Certainly, basins at any location at any elevation, you can have basins at high elevations as well as low.

574
01:13:46.555 --> 01:13:48.114
So I think it's more the,

575
01:13:48.265 --> 01:13:52.284
the toppgraphic position than simply the

576
01:13:52.375 --> 01:13:56.244
the widths between contour lines that can help you identify,

577
01:13:56.484 --> 01:14:04.614
or distinguish some of the potential wetland areas from some of the other areas that are simply simply flat and not wetland.

578
01:14:05.635 --> 01:14:12.685
There is absolutely no hard and fast rule and many of the flat places that you identify as

579
01:14:12.930 --> 01:14:22.949

potential wetland areas are very likely going to be non wetland, which is an excellent reason to conduct a site visit.

580
01:14:25.465 --> 01:14:27.204
Nate Nardi Cyrus: That was a great response, Gretchen, thank you.

581
01:14:27.864 --> 01:14:34.585
Another question we had related to whether, I think this is kind of directed toward Ingrid,

582
01:14:34.585 --> 01:14:37.524
but whether towns can designate their own wetlands,

583
01:14:37.524 --> 01:14:38.935
similar to the state,

584
01:14:39.715 --> 01:14:45.715
the state designated wetlands that have regulatory protection and Ingrid answered that question

585
01:14:45.715 --> 01:14:58.255
in the answer box, but that's going to be something that we're going to actually be covering during our next webinar in the series, which will be next Wednesday at the same time. So stay tuned a little bit of a teaser there.

586
01:14:58.795 --> 01:15:00.744
Unless you want to say anything else about that, Ingrid.

587
01:15:01.470 --> 01:15:05.880
Ingrid Haeckel: Yeah, I, I'm not familiar.

588
01:15:05.880 --> 01:15:10.680
With any local law examples that refer specifically to a

589
01:15:10.680 --> 01:15:20.279
local wetland map that was created using these sorts of methods, but I wondered whether Gretchen might be. Oftentimes

590
01:15:20.279 --> 01:15:28.404

local laws in my knowledge, either refer to those other existing wetland maps and NWI and DEC

591
01:15:29.185 --> 01:15:38.725
or they simply reflect rely on the definition of wetlands that's used by both the state and federal government and rely on

592
01:15:40.345 --> 01:15:48.744
the determination of where those things are, and that's been upheld in the courts, but we will be talking more about those strategies in our next webinar.

593
01:15:48.984 --> 01:16:00.354
I don't know if Gretchen, if you have anything to add. Gretchen Stevens: yeah, I do not know of any municipality that has mapped has created a wetland map for all of their wetlands.

594
01:16:01.164 --> 01:16:07.494
And not just, it's not just using maps, other public maps at the state or federal level.

595
01:16:09.145 --> 01:16:22.765
Most local ordinances that do protect wetlands, if they are trying to expand protections to wetlands that are not protected under state or federal laws,

596
01:16:23.185 --> 01:16:25.675
simply rely on a wetland definition,

597
01:16:26.185 --> 01:16:28.045
but have not already done the mapping.

598
01:16:28.074 --> 01:16:32.515
I will say mapping wetlands throughout an entire town

599
01:16:32.664 --> 01:16:44.725
say in the Hudson Valley would be a huge project, and it would not could not be undertaken very easily by most towns in the Hudson Valley.

600
01:16:46.229 --> 01:16:51.270
Nate Nardi Cyrus: Okay, I think we.

601

01:16:51.270 --> 01:16:55.020
I don't have a lot of other

602
01:16:56.185 --> 01:17:03.534
relevant questions here yet, so if you have something, I'll give you a few more minutes to put it in the question and answer box.

603
01:17:04.375 --> 01:17:15.805
Ingrid Haeckel: There was an earlier question about mapping identifying vernal pools that I thought I'd just return to while we're waiting. And if folks have other questions, or you feel like a question wasn't answered,

604
01:17:16.079 --> 01:17:20.460
please add it again to the Q and A. But

605
01:17:20.460 --> 01:17:29.159
in my experience, at least with vernal pools, the topographic information can help with identifying where those basins may occur.

606
01:17:29.159 --> 01:17:33.300
Oftentimes, the soil maps are not very helpful for pools.

607
01:17:33.300 --> 01:17:36.810
But so you.

608
01:17:36.810 --> 01:17:43.710
often have to rely more on the aerial photos to identify those dark spots

609
01:17:43.710 --> 01:17:48.354
on the landscape, and of course, those can be confused with the shadows from trees.

610
01:17:48.954 --> 01:18:01.104
So it's very much, they are challenging to identify remotely and you really need to verify them in the field to have a definitive

611
01:18:01.439 --> 01:18:06.359
mapping of where those occur.

612
01:18:06.359 --> 01:18:13.470
And ideally do that type of work during the breeding season when

613
01:18:13.470 --> 01:18:17.670
when populations of amphibians would be using the pool.

614
01:18:17.670 --> 01:18:30.270
Gretchen Stevens: And I would say one other thing about that, and if you're looking for vernal pools on aerial photos, you absolutely need to use the leaf off images.

615
01:18:30.270 --> 01:18:42.750
The leaf on images that you get on something like Google Maps will do you very little good at all. Because the tree canopy will obscure most of the vernal pools.

616
01:18:44.545 --> 01:18:56.125
And also vernal pools as Ingrid said, will not show up as as poorly or very poorly drained soils on the soils maps. They're too small.

617
01:18:56.425 --> 01:19:10.494
The soils maps really don't ordinarily show soil units as as small as most of our woodland pools. So, they're simply obscured by the, by the surrounding upland soils.

618
01:19:12.085 --> 01:19:21.295
Ingrid Haeckel: And there's a question related to this, I think about the use of Google Maps for identifying wetlands, or or Google Earth.

619
01:19:21.685 --> 01:19:32.305
And in my experience, the imagery in both Google Maps and Google Earth is generally leaf on imagery taken during the growing season.

620
01:19:32.305 --> 01:19:37.314
And so it's not that useful for identifying these wetlands. in the past.

621
01:19:38.100 --> 01:19:43.734
Bing Maps had fabulous imagery that was taken at an oblique angle,

622
01:19:43.734 --> 01:19:47.005

and was very detailed in some places,

623
01:19:47.034 --> 01:19:48.354
and we would use that,

624
01:19:48.654 --> 01:19:51.835
and they have since discontinued that imagery,

625
01:19:51.835 --> 01:19:52.345
I think,

626
01:19:52.585 --> 01:19:54.805
with the exception of some urban areas.

627
01:19:55.494 --> 01:20:02.814
So, I don't know what happened to that program. Gretchen, I don't know if you have any other suggestions for sources of aerial imagery.

628
01:20:03.090 --> 01:20:15.449
Gretchen Stevens: No, I'm afraid I don't it was very sad when Bing discontinued those oblique maps that you can look at from four different cardinal directions.

629
01:20:16.104 --> 01:20:25.404
Nate Nardi Cyrus: I will say that I was just looking on Google Earth, and they actually do have color leaf off in some of the time series.

630
01:20:25.404 --> 01:20:39.774
So, you can look, there's kind of a background Orthoimage for the, for what you see, but you can go to a little clock icon there and it brings you to a time series. And some of those pictures are color leaf off.

631
01:20:40.465 --> 01:20:50.154
But, again, it's, I think I only found one for the entire series. So going to Discover GIS NY that Ingrid had shared earlier

632
01:20:50.340 --> 01:21:00.630
is probably the best that if you're looking for Orthoimages. I just want to point out that in the chat someone had shared and I posted it re, posted again that

633
01:21:00.630 --> 01:21:12.899
Tompkins county created a wetlands map for all their wetlands and are actively encouraging towns to adopt wetland ordinances that reference it. And I haven't seen that example before but the link is there in the, in the chat. If you're interested.

634
01:21:12.899 --> 01:21:20.550
Gretchen Stevens: And do you think that's they actually delineated all the wetlands?

635
01:21:20.550 --> 01:21:25.710
Nate Nardi Cyrus: I haven't got it. I haven't got a chance to look at it yet. I don't know if you've seen this before Ingrid.

636
01:21:25.710 --> 01:21:31.350
Ingrid Haeckel: I have not, but I'll definitely look into that example things for sharing it.

637
01:21:31.350 --> 01:21:42.390
Yeah, there's been there are a couple questions related to mapping and local laws. For example, whether municipality could

638
01:21:42.390 --> 01:21:46.710
to build on existing maps, but legislate,

639
01:21:46.710 --> 01:21:53.279
buffer areas, for example, around the federal wetlands from NWI map and certainly that

640
01:21:53.279 --> 01:21:58.920
That's a possible approach and I think there are some examples of that.

641
01:22:00.600 --> 01:22:04.560
So, are there other questions.

642
01:22:06.625 --> 01:22:20.244
Nate Nardi Cyrus: Again, a lot of these are yeah looking at regulation, which again is a great plug for, for next week's presentations. they'll cover this in much greater depth, get some more questions in here.

643
01:22:20.520 --> 01:22:24.000
Ingrid Haeckel: Great question.

644
01:22:24.000 --> 01:22:32.789
Why would municipal officials go through this wonderful mapping exercise if they identify wetlands that are not state or federal what can they do to protect them?

645
01:22:32.789 --> 01:22:38.819
Well, regardless of state or federal jurisdiction, municipalities can still.

646
01:22:38.819 --> 01:22:42.510
Consider this information in the context of SEQR,

647
01:22:42.510 --> 01:22:47.850
and possibly in the context of other regulations that they have,

648
01:22:47.850 --> 01:22:51.569
you know, depending on the locality.

649
01:22:51.569 --> 01:22:53.185
Gretchen, do you want to add to that?

650
01:22:53.904 --> 01:22:54.534
Yes,

651
01:22:55.583 --> 01:23:10.465
Gretchen Stevens: Also many of the unmapped wetlands that I tentatively identified in several of those map segments are actually federal jurisdictional wetlands even though they don't show up on

652
01:23:10.465 --> 01:23:25.404
the National wetland inventory map. As mentioned the federal wetland map is not trying to depict jurisdictional wetlands. Many of the wetlands on the NWI maps

653
01:23:25.404 --> 01:23:26.904
are not actually jurisdictional,

654
01:23:27.925 --> 01:23:33.444
but many of the wetlands that you can identify using these methods that we've been showing,

655
01:23:33.444 --> 01:23:33.774
you

656
01:23:34.800 --> 01:23:40.710
are protected under the federal Clean Water Act.

657
01:23:40.710 --> 01:23:47.369
Um, the fact that they don't show up on the federal wetland map is neither here nor there.

658
01:23:47.369 --> 01:24:01.949
Nate Nardi Cyrus: I see another question here. Would this method of map analysis also be helpful for identifying different risks to potential wetlands, maybe agricultural runoff, or would this be best accomplished with a site visit?

659
01:24:04.435 --> 01:24:18.864
Gretchen Stevens: I would say this is very useful for identifying potential risk because the topography can show you so much about where the water is flowing, where it's flowing from, where it's flowing to.

660
01:24:20.215 --> 01:24:26.904
And the topography is absolutely the way to figure those things out.

661
01:24:27.414 --> 01:24:27.984
Also,

662
01:24:28.284 --> 01:24:28.885
of course,

663
01:24:28.914 --> 01:24:35.274
standing in the field and looking at these areas is another very good way,

664
01:24:36.085 --> 01:24:43.135
but the topographic data can tell you a lot about that remotely.

665
01:24:45.630 --> 01:24:56.699
Nate Nardi Cyrus: We have another question here. Can you get state protection for wetland that adds up to 12.4 acres if it's contiguous for the federal wetland.

666
01:24:56.699 --> 01:25:05.850
Ingrid Haeckel: If a wetland is 12.4 acres or larger, but it's not on the state wetland map.

667
01:25:05.850 --> 01:25:16.859
And if other, if there are other state permits that are relevant to that to whatever the situation is,

668
01:25:16.859 --> 01:25:25.529
I believe that the state sometimes applies jurisdiction in those cases, recognizing that the, the.

669
01:25:25.529 --> 01:25:37.770
maps are out of date, but that's a question that you would have to bring or a situation you have to bring to DEC environmental permits.

670
01:25:37.770 --> 01:25:43.890
I don't think it has anything to do with whether or not it's a federally jurisdictional wetland.

671
01:25:43.890 --> 01:25:56.100
Yeah, and on the subject of wetland state wetland maps, we're lucky to have Roy Jacobson joining us from DEC

672
01:25:56.100 --> 01:26:07.109
Bureau of ecosystem health, head of the habitat protection section next week and hopefully he can help answer some of these questions about the status of state wetland maps updates.

673
01:26:10.439 --> 01:26:23.064
Nate Nardi-Cyrus: We have another question directed at Gretchen, asking to elaborate on the unmapped federal wetlands. Is this part of the Clean Water act? And I know you're going to go over this next time, Gretchen, but we seem to have some time.

674
01:26:23.064 --> 01:26:26.125
So, briefly discuss that.

675
01:26:26.399 --> 01:26:31.140
Gretchen Stevens : Well, it only to say that the

676
01:26:31.140 --> 01:26:38.430
Uh, both the state maps and the federal wetland maps are

677
01:26:38.430 --> 01:26:41.670
Are incomplete.

678
01:26:42.685 --> 01:26:43.645
The federal maps,

679
01:26:43.645 --> 01:26:48.265
the National wetland inventory maps do show lots of wetlands in the landscape,

680
01:26:48.265 --> 01:26:50.694
and they do show even lots of small wetlands,

681
01:26:51.145 --> 01:26:54.175
but they miss many small wetlands,

682
01:26:54.385 --> 01:27:00.114
including small wetlands that are jurisdictional under the Clean Water Act.

683
01:27:01.045 --> 01:27:14.48
And this has always been the case. It's, this is nothing new. It has nothing to do with changes to the, the Clean water rule, under the previous administration.

684
01:27:16.613 --> 01:27:18.444
So that's just how it is.

685
01:27:18.444 --> 01:27:31.614
And you should also know that the federal government, the Army Corps of engineers, and the EPA do not rely on the National wetland inventory maps to determine where they have jurisdiction over wetlands.

686
01:27:32.725 --> 01:27:44.515
Unlike the state of New York, the federal government doesn't use the maps for that purpose at al. The maps give them some general idea of where their wetlands are.

687
01:27:44.545 --> 01:27:51.505
But they require onsite delineations and onsite determinations of jurisdiction.

688
01:27:51.869 --> 01:27:57.029
Silence.

689
01:27:58.465 --> 01:28:08.755
Ingrid Haeckel: I want to put one more plug for the virtual field trip video, which we recorded last summer, and goes in some more depth.

690
01:28:08.784 --> 01:28:21.234
I mean, it looks in the field at the kind of defining characteristics of different wetland types that we need, that Gretchen showed on this example map from the Millbrook Preserve.

691
01:28:21.689 --> 01:28:35.640
And talks about some of the vegetation characteristics and wildlife habitat. So if you have time, we hope you'll check that out and we will send that link as well in our follow up correspondence tomorrow or Friday.

692
01:28:39.744 --> 01:28:54.055
Nate Nardi Cyrus: Okay, I see a clarification that the wetlands in Tompkins county were delineated by consultant and they've not yet been field checked to my knowledge, but utilized Lidar for the delineation detail.

693
01:28:55.614 --> 01:29:09.744
Which makes sense, we'll have to all look into that after the webinar here. But anyway, I think this is a good time to call it. It's almost 430. Thank you all for attending and thank you, Gretchen and Ingrid for those fantastic presentations.

694
01:29:09.744 --> 01:29:22.824
I want to remind everyone to please fill out that 3 question survey that pops up after this, and that you will be receiving. If you're looking for your municipal training credit, you'll receive that automated email at the end of the Webex.

695
01:29:22.824 --> 01:29:37.795
Please we encourage you to attend next week's and that's going to look a lot more at this question of regulation of wetlands and jurisdiction and all this good stuff

696
01:29:37.795 --> 01:29:39.295
that we've been enjoying talking about.

697
01:29:39.295 --> 01:29:49.345
So that's may 19th at 3 o'clock, and we'll be passing around that registration link. So you can sign up for that as well. Alright.

698
01:29:51.750 --> 01:29:55.829
Thank you everyone, thank you. Bye. Bye.