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Iris

The Alberta Native Plant Council Newsletter



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anpc.ab.ca



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Cover photo: Marsha Hayward
Common fireweed (*Chamerion angustifolium*).

Capture Curiosity with NatureLynx and Alberta PlantWatch

Jordan Bell

No doubt you're familiar with naturalist smartphone apps that help users put names to observations of plants and animals they encounter in their travels. But, did you know there is an Alberta-based app focused exclusively on Alberta species, and that aims to connect users to the many citizen science and monitoring initiatives taking place province-wide?

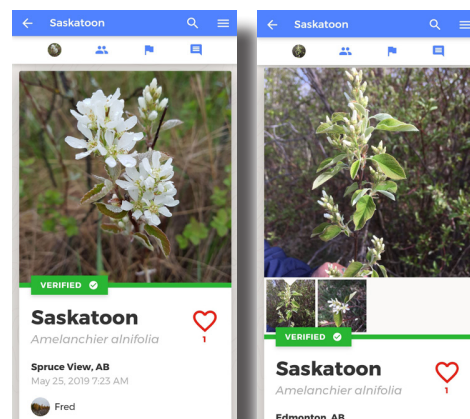
NatureLynx is a free citizen science app developed by the Alberta Biodiversity Monitoring Institute (ABMI) to help Albertans learn about the biodiversity in their own backyard while contributing to various data collection efforts. Users can upload their own photos, recommend species identifications to others, and join existing Alberta-based citizen science projects. Users can also create and manage their own groups and missions on the app to collect sightings, and pursue questions, of particular interest to them!

One such mission aims to monitor the spring bloom of saskatoon (*Amelanchier alnifolia*). Elisabeth Beaubien of Alberta PlantWatch—a citizen science project that has tracked the annual bloom of plant species across the province

since 1987—is the driving force behind the saskatoon PlantWatch mission. Beaubien saw an opportunity to grow the community of PlantWatchers by embracing the digital data collection platform offered by NatureLynx. Although saskatoon is just one of 26 plants observed by PlantWatch, it is easily identifiable, can readily be found in all of our natural regions, and first bloom can be clearly observed, making it a great fit for crowd-sourced photo data.

Last season (2019), with the help of data collected on NatureLynx, PlantWatch recorded a mean saskatoon first

See **NatureLynx and PlantWatch**, page 8



Pollinator Profile

Lincoln Best

Bee Species: *Dufourea dilatipes* Bohart, 1948 (Halictidae)

Plant Species: *Calochortus apiculatus* Baker, 1874; *Calochortus lyallii* Baker, 1874 (Liliaceae)

Relationship: Bee is a narrowly oligolectic forager and a pollinator of these plant species.

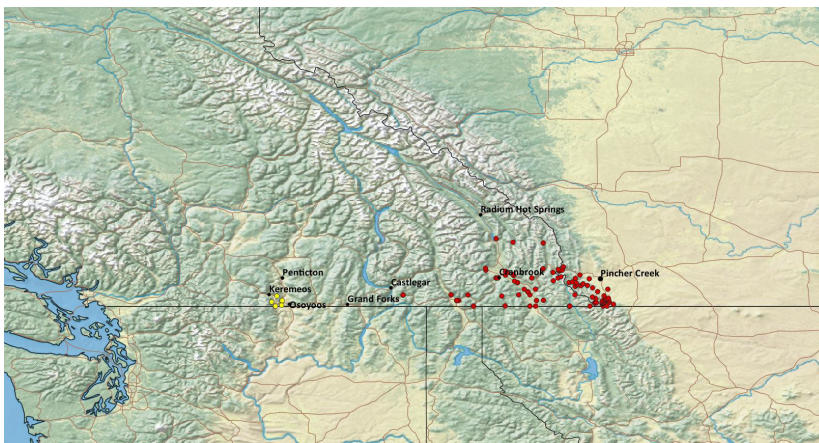
This profile presents the bee *Dufourea dilatipes* Bohart, 1948. It's a small, 8-10 mm, black, bristly sweat bee in the family Halictidae. Unlike its closest sweat bee relatives, most of whom are semi-social, *D. dilatipes* has a solitary lifestyle. Males and females emerge in concert in late spring, mate, and the females continue on nest building, provisioning pollen balls, and laying eggs.

This sweat bee excavates nests in the ground and is a pollen collecting specialist of two mariposa lily species within the Canadian extent of its range. The fidelity of these bees to their floral hosts is described as narrow oligolecty, meaning they collect pollen from only a few closely related species of flowering plants. In this case, those species are *Calochortus apiculatus* Baker, 1974, known as Baker's, three-spot, or pointed-tip mariposa lily, and *Calochortus lyallii* Baker, 1874, Lyall's mariposa. For more information on pollen collecting fidelity in bees, review

Cane and Sipes (2006). The genus *Calochortus* is increasingly species rich as one travels south and west toward montane California. *C. apiculatus* is limited to the extreme southwest of Alberta and ranges westward to the Kootenay Boundary in BC, whereas *C. lyallii* is known only from the South Okanagan Grasslands Protected Area and nearby localities in Canada. Both lilies bloom from mid-May to early July and favour dry, often rocky habitats, open meadows, and conifer forests. *D. dilatipes* was first discovered in Waterton National Park in 1923, and later in 1930 and 1938 in adjacent Glacier National Park in Montana. The present range of *D. dilatipes* is now known to overlap that of its floral hosts in southern and southeastern British Columbia, and southwestern Alberta in Canada. Our little black bee requires these floral hosts. It's common among populations of its host and absent outside their range.

Propagation of *Calochortus* from seed is challenging, requiring cold stratification at very low temperatures and high moisture levels. Conservation strategies are straightforward: 1) Conserve habitats where the host plants are known to occur, 2) Re-establish populations of these plants where they've been lost, and 3) Support your local native plant nursery.

See **Pollinator Profile**, page 8



Distribution of *C. apicalatus* and *C. lyallii* in Canada. (Source: GBIF.org 2020)



Calochortus apiculatus



Calochortus lyallii



Dufourea dilatipes male perched on *Calochortus apiculatus*



Dufourea dilatipes male nectaring on *Calochortus apiculatus*

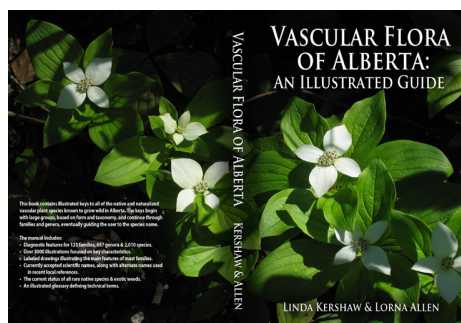
Coming soon to a store near you!

Linda Kershaw and Lorna Allen

For the past 4-5 years, we've been working on a series of illustrated keys for the vascular plants of Alberta. The purpose of a plant key is to help the reader to identify a species by working progressively through a series of choices, looking at diagnostic features of the unknown plant. Previously, the most comprehensive keys for Alberta were found in the *Flora of Alberta*, published in 1983. Since then, there have been major revisions in botanical classification. Some of these have resulted in new (or at least different) names for species that grow in Alberta, and some have led to the reorganization of groups such as families and genera. Also, since 1983, over 240 new species have been identified growing wild in Alberta. We felt it was important to incorporate these species into the flora. We have also simplified terminology, where possible, and provided a glossary to define any of the more technical terms used.

When people identify a plant, many want to know if the species is native or exotic, and, if introduced, whether or not it is designated as a noxious weed in Alberta. At the other end of the spectrum, many plant lovers are interested in identifying rare native species. In an effort to address this, we've noted exotic species with superscript Xs (X=exotic with no weed status; XX=noxious weed; XXX=prohibited noxious weed). About a dozen species have both native and exotic varieties or subspecies growing wild in Alberta, so these have been added to the keys with their distinguishing characteristics. Rare species are noted with their S-ranks* in superscript (S1; S1S2; S2; S2S3), and tracked S3 species are also included.

A picture is worth a thousand words, so we've included illustrations for every species to help with identification. There are also labelled drawings for most families, showing plant parts that are referred to in the keys.



As the keys have been completed, the ANPC has posted them on their website, allowing people to try them out and let us know if there were errors, omissions or ways to improve the text and illustrations. Last fall, we finally finished the last of the keys, and through the winter we've been at work editing and updating them, and then compiling the revised versions in a single volume. The result is a 500-page book entitled *Vascular Flora of Alberta: An Illustrated Guide*.

We had hoped to have the book on shelves by April 2020, but as with most projects these days, COVID-19 interfered with our plans. We are publishing through Kindle/Amazon, and Amazon couldn't ship proofs to Canada for several weeks. We were finally able to order proof copies of the book in May and should have copies in hand by the end of the month. Once these arrive, we hope to complete the final edits and publish the book in early June. In the meantime, here's a peek at the cover. It will be sold through Amazon.ca, and it will also be available for distribution through bookstores.

* An S-rank is the subnational (provincial or state) rank given to a taxon using NatureServe methodology. The rarest species are S1; the most common and widespread are S5. ♦

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Photography Basics – Plant Edition

Lorna Allen

I have taken (no exaggeration) hundreds of thousands of photos: a few good ones, many OK ones, and the majority which go directly into the garbage bin. This means that I have made many mistakes that I can perhaps help others avoid. So, let's start with some very basic suggestions and tips for setting off to take photos – with a focus (ha!) on plant photos.

Before you go

Nothing is more frustrating than having the camera refuse to take any more pictures because it's out of memory. Of course, if this happens, you can just go through and erase the duds directly off the SD card, right?

NO, DON'T DO IT! NEVER DELETE INDIVIDUAL PHOTOS FROM THE CARD!

This is one of the easiest ways to corrupt a memory card. And then, you'll have trouble retrieving any of the photos. If you copy the photos from your camera to your computer, then you can reformat the memory card (which safely removes all the pictures at once, so be sure you have copied them over first). It can then be reused.

Tip #1

Before you head out, make sure that the camera's memory card is empty or nearly so. And bring a spare memory card, if you have one.

A classic mistake, if ever there was one, is to head out and then have your camera die because the battery was low. On a basic film camera, this little mistake just meant you were guessing at exposure. On these new-fangled digital things, no battery, no photo.

Tip #2

Make sure your camera (phone) battery is charged before you head out. Bring a spare (charged) battery if you have one.

Tip #3

A corollary to tip #2; if the camera won't "go," maybe the battery is dead OR maybe it's just not installed correctly. Give a double-check that the battery is in properly before giving up.

When you get there

OK, you have successfully arrived at your destination, functional camera in hand. You take the best gaillardia picture EVER – except the camera was on some wacky setting, and now it's pouring rain so there's no chance of a retake. If the camera is carried in a pocket or bag, sometimes the settings somehow get changed, even on a point-and-shoot.

Tip #4

When you arrive, take a quick trial photo, of anything really, and review the photos to confirm that things look good.

Or, you could just check your settings, but where's the fun in that? Which leads to:

Tip #5

Take lots of photos! The next one is probably going to be the winner. While flowers might not walk away, they do wave in the breeze, so if you take multiple photos and maybe try different angles, you increase your chances of getting a shot that is focused on the bit you wanted to focus on.

What to photograph

I mentioned earlier that I have taken some "good" plant photos. What "good" means depends somewhat on why you are taking the picture. If everything is out of focus, it still might be very artsy, so not a bad *photo*, but maybe not a good *plant* photo. Here are some maxims to keep in mind as you stalk the wild plant, hoping for the perfect photo and possibly eventually

wanting to figure out what species of plant you have found:

The full picture

This is where you could start, and is one I frequently forget. Growth habit can be important for plant identification. Before you move in to your target, take a moment to get a picture of the full plant. Then, move in.

Cuddle up, get close, get cozy

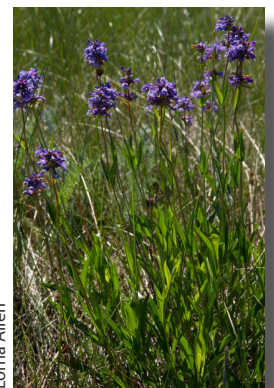
An excellent speaker at a photography workshop I went to suggested: "look down; are you wearing cement shoes?" I would add to be sure to first check for creeks to fall in or other impediments, but the tip is – go closer! Generally, the plant filling the frame will make a more interesting picture than the plant somewhere off in the distance, although of course you can always take a landscape shot first and then move in closer for your plant pictures.



A landscape photo with some slender blue beardtongue in it

Lorna Allen

A photo of slender blue beardtongue (*Penstemon procerus*)



Lorna Allen

See **Plant Photography Basics**, page 5

Plant Photography Basics, from page 4

Nose to toes

If you think you might actually want to identify the plant species in the photograph, you need to consider the “nose to toes” rule — take photos of all the parts that you can think of, top to bottom. In addition to the artsy one suitable for framing.

Basal leaves are often important to identification, as may be the underside of the flower head. It really helps to have some idea of the features of the particular plant group that are important to the ID. A beautiful close-up of a yellow mustard flower may be, well, beautiful, but it will be very little help if you want to know what species you are looking at. For that, you need stem leaves, basal leaves, fruiting pods, and a close-up of hairs would really help. Often (although not always) the bloom itself is not the most important bit for ID, even if it is the most eye-catching.

Look ‘em in the eye

By all means, look down and take a photo; it might help with ID. BUT, photos looking down on the subject (from whatever height you grew up to) are usually less interesting than ones taken from other angles. So... get down to the level of your subject — look it in the eye.

Brace yourself

The fewer things that are moving, the more likely it is that you will get a shot that is in focus. Camera shake is one thing that you can easily reduce. The



Lorna Allen

More interesting western wood lily from the side

truly serious carry a tripod (and it really does make a difference). Even without a tripod, you can look for ways to prop your camera on something (a tree? a bench?), or sit down and prop your elbows on your knees. Anything that helps to steady the camera will help to reduce the number of fuzzy shots, although some are inevitable.

Maintain focus

What is or is not in focus in a photo can be highly technical — juggling shutter speed, ISO and f-stop to achieve your desired result. At its simplest, though, decide what you want in focus and try to achieve that. In a group of flowers, it's generally annoying if the ones in the front are fuzzy. One way to avoid this problem is to try to find a group of plants where the flowers are all roughly the same distance from the camera.

A blurred-out background, on the other hand, helps to highlight the subject, as long as the subject itself is in focus. And if it is ID you are interested in, the part you want in focus will vary as you move from the nose to the toes.

Watch your back(ground)

Everything that is in the picture is in the picture. Makes sense, right? The problem is that we often get so focused (pun STILL intended) on the subject that we forget to notice the background distractions. Look at the beautiful red-necked grebe photo — with a reflected building.



Lorna Allen

Red-necked grebe and building reflection

Some things can be moved — don't damage the tree, but have someone hold that annoying branch out of the way. Some things (say, dead grass bits) can be removed, but be careful here. If you are thinking of removing something, be sure you don't damage anything else: for example, be sure not to disturb the roots of your subject or of other nearby plants.

Some things cannot be moved, like the building behind the grebe, rudely putting its reflection in the water. Since you can't move the building, you either need to change the angle of your shot, or try to photoshop it out later. Changing the angle is arguably easier (but don't fall in the water).

And finally

You are home, you are reviewing your photos, and naturally, you want to know what you photographed. You probably realize that the best way to determine the species of a plant is to collect it, press it, and key it out using a dissecting scope to look at the picky details. Then, of course, you submit the specimen to one of Alberta's excellent herbaria. There are however rules against collecting (without permits), at least in all protected areas. Next best option? Cart the area-appropriate flora



Lorna Allen

Boring western wood lily (*Lilium philadelphicum*) photo from above



Lorna Allen

Mexican gold poppy bloom with an annoying fuzzy lupine

See Plant Photography Basics, page 8

A Rose by Any Other Name

Lorna Allen

The beautiful pink (sometimes almost white) flower of the wild rose is immediately recognizable—as a rose. There are however three species of wild rose in Alberta: common wild rose (*Rosa woodsii*), prairie rose (*Rosa arkansana*), and the provincial emblem, prickly rose (*Rosa acicularis*). Unfortunately, the flowers—their most striking feature—look the same in all three species. So, to know which species you are looking at, you need to look beyond the flower to the plant itself.

If it's a short plant, sprouting right from the ground, with few or no branches, there is a good chance that you are looking at prairie rose, which rarely gets taller than 40 cm. If it's a taller shrub that does not die back over winter, it could either be common wild rose or prickly rose; both can get over 1 m tall and are often quite bushy.

The arrangement of thorns and prickles on the stems and flowering stalks is an important characteristic that can help to separate the species. A prickle is a sharp-pointed outgrowth from the surface of a plant, from the stem in the case of roses. A thorn is different. It is a stiff, sharply pointed projection developed from a reduced branch and is stouter and longer than a prickle.

The lower stems of all species typically have both prickles and thorns, but prairie rose has thorns that are usually no more than 3 mm long, while the other two have thorns up to 5 mm long. Prickly rose has upper, younger stems that are, well, prickly, but so does prairie rose. Common wild rose, however, has some thorns but few to no prickles on the younger branches, and the upper branches are often smooth and reddish brown. If you have a rose that is short, quite prickly all over and with few to no branches, you probably are looking at a prairie rose. If you are looking at a taller, bushier plant that is pretty much prickly throughout, it is probably prickly rose. And, if

your plant has smooth upper branches with some thorns but few to no prickles (especially if the branches are reddish brown), it is probably common wild rose.

While individual flowers all look similar, their arrangement on the plant can provide a clue to ID. Prickly rose usually has only one or two (sometimes three) flowers in a flat-topped cluster (corymb*). The other species may also have only a few flowers per cluster, but typically, they have several. All might have corymbs, but common wild rose is the only species that sometimes has a longer, narrow raceme** of many flowers, 10 per cluster or more (Flora of North America 2014). Because it dies back every year, the flowers of prairie rose grow only on new branches, but flower clusters can be on first year or on older branches in the other species.

The fruit can also be a useful feature to look at. Both prairie rose and common wild rose usually have rounded fruits. The sepals can be erect in both species, but they are often spreading in common wild rose. The fruits of prickly rose might be rounded, but they can also be pear-shaped to oval. The sepals tend to be erect and may be capped with a beak.

By looking at the combination of plant height, branching, branch prickles, flower distribution and fruit shape, it should be possible to identify your rose to species with confidence. There is, however, one little problem to keep in mind: "hybridization between our species sometimes make identification problematical" (Moss 1983). So, if your plant just does not seem to fit with one of the species, it is quite possibly a hybrid.

Several of the features overlap between species, so trying to decide which species you are looking at can be confusing, but here's a matrix that I hope will help you to identify your wild rose:

Feature	<i>Rosa arkansana</i>	<i>Rosa acicularis</i>	<i>Rosa woodsii</i>
Plant < 50 cm tall	✓	✓	✓
Plant ≥ 50 cm tall		✓	✓
Upper branches prickly	✓	✓	
Flowers 1-3 per cluster	✓	✓	✓
Flowers ≥4 per cluster	✓		✓
Flowers in corymbs	✓	✓	✓
Flowers in racemes			✓
Fruits rounded	✓	✓	✓
Fruits oval		✓	
Sepals on mature fruits erect	✓	✓	✓
Sepals on mature fruits spreading			✓

* A corymb is a flat- or round-topped flower cluster in which the flowers on the outer (lower) branches bloom first.

** A raceme is a flower cluster with an unbranched, elongated central stalk bearing few to many stalked blooms, and with lower flowers developing first.

See *Rose by Any Other Name*, page 7

Rose by Any Other Name, from page 6



Lorna Allen

One of the species of Alberta wild roses (*Rosa* sp.)



Lorna Allen

Prairie rose (*Rosa arkansana*) is short, often with many, sometimes white flowers



Lorna Allen

Hips are rounded, often with spreading sepals in common wild rose (*Rosa woodsii*)



Lorna Allen

Prickly rose (*Rosa acicularis*) has prickles and thorns on even the branches bearing the fruiting stalks



Lorna Allen

Note the reddish-brown bark with only a few thorns and no prickles in common wild rose (*Rosa woodsii*)



Lorna Allen

The hips for prairie rose (*Rosa arkansana*) are rounded



Lorna Allen

Rosa stem with both thorns and shorter, thinner prickles



Lorna Allen

Both common wild rose (*Rosa woodsii*) and prickly rose (*Rosa acicularis*) are usually a taller, bushy shrub



Lorna Allen

Oval hips with erect sepals typical of prickly rose (*Rosa acicularis*)

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NatureLynx and PlantWatch, from page 1

bloom date of May 20th in the central parkland; the mean first bloom time from 1973 to 2016 is May 23rd. While last year's date falls within the normal range of saskatoon bloom times across Alberta, looking at the annual variation in spring bloom can tell us a lot about our changing climate. Plants take cues from the changing seasons for their personal "calendars": the rising temperature of spring triggers plant growth and the opening of flowers. A warm winter and spring usually leads to earlier flowering times. Beaubien and her fellow researchers have previously found that some early season Alberta species have shifted their first bloom time by several weeks since the 1930s! (Baubien and Hamann 2011) This makes PlantWatch a strong dataset that demonstrates our changing climate is influencing plant phenology here in Alberta.

This spring, the partnership continued to bloom, with another saskatoon mission taking place in May. We hope that NatureLynx can continue to provide a platform for budding PlantWatchers for years to come, and to help monitor the effects of ongoing climate change in our province.

NatureLynx provides an opportunity to connect new or existing citizen science projects with a pool of eager naturalists around the province. It's an easy and convenient way for participants to share their sightings and contribute data. And hosting citizen science initiatives on NatureLynx helps make the data available to anyone with the click of a "download" button. We encourage all ANPC plant enthusiasts to participate in upcoming missions, and to consider future initiatives that may benefit from this new community of online naturalists.

For more information, please contact Jordan Bell, the ABMI's Citizen Science Coordinator at natlynx@ualberta.ca.

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Message from the President

Kristen Andersen

I am looking forward to the coming year and working as the ANPC president alongside a fantastic Board. I'm very proud to be a part of the ANPC and for the opportunity to help continue its mission of conservation and education in support of native plants.

When I moved to Edmonton in 2007, I was thrilled to discover the ANPC. I had been very active in botanical societies where I previously lived in the states of Washington and Maine. Right away, I found there was a request for a volunteer to lead a field trip to the Slave Lake Provincial Park, and I offered to coordinate the trip. During that trip I met Leslie Monteleone and Alison Dinwoodie, who quickly became my role models.

In the next 12 years, many more people from the ANPC Board and long-standing membership would become my role models and mentors. I'm inspired by the great people that make up this organization. I'm especially inspired by the tradition of sharing knowledge that it sustains. Since that trip to Slave Lake, I have worked with the Adopt-a-Plant program, served as Chair of the Information and Education Committee, participated in setting up plant study groups, and worked as Central Director. I've learned through these experiences that ANPC and its membership have a rich history and vibrant future, and there is much to look forward to. ♦

Pollinator Profile, from page 2

Lincoln R. Best is a native bee taxonomist. He works on a broad spectrum of research in northwestern North America with Oregon State University and the University of Calgary. He works to engage the public in conservation and scientific outreach as a director for the Native Bee Society of BC and Bee City Canada. You can follow him on social media @beesofcanada.

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Map Data

GBIF.org (04 April 2020) GBIF Occurrence Download <https://doi.org/10.15468/dl.qkybqt>

GBIF.org (06 April 2020) GBIF Occurrence Download <https://doi.org/10.15468/dl.nornom> ♦

Iris is published three times a year by ANPC. The Council aims to increase knowledge of Alberta's wild flora and to preserve this diverse resource for the enjoyment of present and future generations.

If you have an announcement, article or other item, you are invited to submit it to the editor for publication. Items concerning native plants will be given highest priority.

The editors reserve the right to edit submissions, but will review changes with the authors whenever possible. Disputes will be resolved in favour of the audience.

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Submission deadline for the next issue:
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Plant Photography Basics, from page 5

with you, lie on your belly if necessary, and key your plant out where it grows. And/or, take the time to take lots of photos, near and far, from various angles, and to photograph both the full plant and the features that might help with ID, from "nose to toes." ♦