Environmental studies and natural history texts: indexing issues

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Texts on natural history, horticulture, and environmental topics present interesting challenges for indexers. Animal and plant names, the handling of hierarchical information, wide variations in scope and fluid terminology in evolving fields are all areas ripe for the picking, for endless debate on the best way to do it. Special text arrangements and features such as A–Z layouts and indexable lists, keys, and illustrations are common. This article introduces these issues and suggests practical indexing approaches that can be applied to other subject areas as well.

I am always happy when books on natural history and the environment cross my desk so I can spend a week thinking about plants, animals, or rocks instead of identity politics, law, or taxes. Over the years I have indexed a couple of dozen of them, including encyclopedias and field guides, practical gardening guides, and general-interest titles on everything from air pollution to wildfire. These texts present a variety of interesting indexing issues and challenges.

Text types and varied audiences

Publishing in these areas seems to be alive, well and varied. The scholarly press for which I do most such projects is publishing 200 or so new titles this year, and about a sixth of them fall into this category. Many are crossover titles meant for the general public. The environment and environmental change are timely issues, so there are plenty of trade titles. Some common topics are climate change, water supplies, and energy. I'm including gardening books, a publishing standby, in this discussion as well. Field guides and other natural history guidebooks abound; these days they might focus on ecological niches or processes instead of particular locales or groups of plants or animals. Environmental studies programs have grown in colleges and universities over the last couple of decades, so textbooks have proliferated as well. Thanks to environmental laws, government agencies churn out environmental documents – impact reports, technical analyses, management plans, and restoration and management manuals for environmental professionals. Many such documents are to be found online. I have never indexed a project like this, but it seems to me there is marketing potential there for indexers.

As text types vary, so do audiences. Your index user might be a high school or college student, an amateur birder, a professional forester, or a geneticist. As always in indexing, it's important to know who your readers are and to have some idea of their background in the book's topic. How much do they already know about the subject? What can they be expected to take for granted, and how familiar will they be with the book's ideas and terminology?

Terminology in the text and index

Terminology sophistication is an issue in every subject area. In texts related to living things, scientific nomenclature is the 'gorilla in the corner,' and I'll discuss it separately below. Apart from biota names, terminology may be more or less technical and scientific, depending on the text, and the index language will mirror the text. But when an index is heavy on technical terminology, you have to decide how much 'hand holding' you need to do for readers. You may need to structure the index as a guide for the less knowledgeable. The most useful tool for this is generous cross-referencing from broader and less technical terms to narrower and more technical ones. Or perhaps you can assume that your audience is more expert and will know exactly what 'aeolian sediment transport,' 'crassulacean acid metabolism,' or 'parr marks' signifies. If so, you can assume that users will not need as much of a road map to find their way around the index, and you can be more relaxed and less thorough about cross-referencing and alternative main headings.

Often terminology in environmental texts is evolving. Because these are timely topics, scholarship, publishing, and media coverage are lively, and ideas and language are fluid. Think about the terms 'global warming,' 'greenhouse effect,' and 'climate change.' Each means something slightly different, and their meanings and implications have changed over the years. My sense is that the first two are the older terms, and the broader 'climate change' has emerged into wide use as our understanding of the potential broader impacts of the greenhouse effect and global warming have grown. I think there is a typical process in which technical terms are born somewhere in academia, ripple out into wider usage among experts, and then trickle down to the general reader via non-academic writing and popular media coverage. When indexing, it's important to understand where a particular term falls on that evolutionary trajectory. Two authors may use the same term differently, or a term may mean something a bit different from what it meant two years ago. Growing knowledge among non-experts may mean you can use technical terminology more freely in the index.

Often terminology proliferates, with more specific terms arising and gradually becoming more familiar. A current example relates to atmospheric carbon dioxide. Ten years ago, you might have had a single index entry for 'carbon dioxide.' Now, you might need a list like this:

carbon dioxide
carbon emissions
carbon emissions reduction
carbon footprint
carbon market
carbon reduction policy
carbon sequestration
carbon taxes
carbon trading

Below is a list of main headings from a project about wildfire, a subject that Americans in the West are becoming all too familiar with. Where once the heading 'fire management' might have been enough, we now have 'fire exclusion,' 'fire suppression,' 'firefighting,' 'light-burning,' and 'prescribed burning,' all of which are different things.

fire adaptations/responses
  See also individual species and genera
fire behavior, 18–25
  See also fire regimes
fire ecology, xii–xiii, 29–90
  See also fire regimes; Indian fire use
fire energy cycle, 3–4, 12–13
fire exclusion/suppression, 90, 104, 119
  See also firefighting; light-burning debate
fire frequency. *See* fire return intervals
fire hazard. *See* fire risk; fire safety
fire lines, 120–121
fire plans, 132–133, 136
  See also fire safety
fire policy and management, xiii–xiv, 95–104
  See also fire exclusion/suppression; firefighting; prescribed burning
fire poppy, 30 (plate)
fire regimes, 29–32
  See also fire behavior; fire return intervals
fire return intervals, 29–31, 35
fire risk, xii
fire safety, 148–160
fire suppression. *See* fire exclusion/suppression; firefighting; light-burning debate
fire triangle, xii, 6–13, 7 (plate)
fire watches and warnings, 20
fire weather, xiii–xiv, 122, 130
  See also Santa Ana winds; wind
firebreaks
firefighting, 6–7, 117–122, 117 (map)
  See also fire policy and management

Names of biota and/or natural materials and processes are usually the terminological heart of environmental texts. Resulting indexes tend to have a noun-centered 'skeleton' of main headings. Landscaping books, management documents and conservation or restoration manuals are different, however. As 'how-to' texts, they often focus on tasks and actions, and a good index for this kind of text will have more of a verb-centered skeleton, or at least a healthy sprinkling of gerund main headings among the usual nouns. For example, a book I own on home vegetable gardening and small livestock has all the typical entries for names of plants and animals, but it also has lots of headings like these:

Blanching vegetables
Breeding chickens
Canning
Chip grafting
Composting
Cover cropping
Double-digging
Feeding chickens
Fertilizing
Freezing vegetables
Grafting
Hoeing
Hilling up
Intercropping
Layering
Manuring

Ignoring this action focus and making entries only for the object of the task is a common indexing mistake, I find – so that 'grafting' appears only as a subheading under 'fruit trees,' for instance.

Basics of biota names

Biota names present huge challenges for indexers. The very existence of scientific nomenclature for living organisms means that technical terminology may be an issue, even if scientific nomenclature is not used in the text. This is especially true of books concerned with plants – although most people are unfamiliar with scientific names of animals, even casual gardeners often do know scientific names of plants.

Name format and style

There are international standards for scientific names, and publishers generally follow these. The standards are known as the Codes of Nomenclature. Animal and plant names are administered by the International Commission on Zoological Nomenclature and the International Code of Botanical Nomenclature; there are also organizations that oversee bacteria and virus nomenclature. Googling these organizations will lead you to more information.

Briefly, genus and species names are italicized; names for families, tribes, and other higher taxonomic levels are roman. Genera and families are capitalized, species are lowercased. Handling subspecies and cultivar names gets a bit more complex. When several species of one genus are discussed, species names may appear as subheadings, or the whole binomial may appear as a main heading – the best way to handle this depends on the scope of the text (and of course your editor's preference). Common names are always roman; they are typically not capitalized (except for proper noun elements), but an initial-cap style for common names of animals as in the following example is not uncommon. Parenthetic plurals are sometimes used for main headings at higher taxonomic levels which have subheadings, as in the second example below.

Examples showing some possible index styles for biota names

INDENTED FORMAT: ANIMALS

Falco
columbarius, **122–123**, 122 (plate), 161, 282–283
peregrinus, 10, 15, 46, **123–124**, 123 (plate), 161, 282–283
peregrinus anatum, **124**
sparverius, 21, 27, **120–121**, 121 (plate), 282–283
Falconidae, **120–124**, 282–283
See also falcons; individual species
falcons, 31, **120–124**
American Kestrel, 20–21 (figure), 21, 27, **120–121**, 121 (plate), 269
American Peregrine Falcon, **124**
seasonal occurrence, 282–283
viewing sites, 269
See also Merlin; Peregrine Falcon
flycatchers, 24, 31, **191–194**, 191–192, 288–289
Black Phoebe, 12, **192–193**, 192 (plate), 228, 247, 288–289
See also Say's Phoebe
Forster's Tern, 16–17 (figure), 45, **181–182**, 182 (plate)
seasonal occurrence, 286–287
viewing sites, 229, 230, 239, 252, 263
Fulica americana, 19, **130–131**, 131 (plate), 282–283

INDENTED FORMAT: PLANTS

sage(s), 26, 51, 79, 80, pl. 39
black, 147, 175
purple or white-leaved, 147, 175
See also bladder sage; hop sage
salal, 119, 134, 141, 142, 164, 171, 243, 253, pl. 71
Salazaria mexicana, 128, 148, 220
Salicornia, 95, 140, 148, 160–162, 218
virginica, 75, pl. 94
Salix, 130, 144, 146, 192, 193, 207, 225
salmonberry, 165
salt grass, 75, 140, 160, 162
salt marsh bird's beak, pl. 97
saltbush, 128, 140, 147, 148, 152, 218
See also shadscale
Salvia, 26, 51, 79, 80
leucophylla, 147, 175
mellifera, 147, 175
spathacea, pl. 39
San Diego thorn-mint, 38
sand-verbena, 140, 152, 249, pl. 86

RUN-IN FORMAT

pine bark beetles, 96–97
pine engraver, 96–97
pine marten, 60
pines, 27, 28, 33, 251; foxtail pine, 29, 31; gray or ghost pine, 22, 31, 33; insects and pathogens, 96–97, 98, 102; knobcone pine, 31, 33, 73, 77, 81, 84; lodgepole pine, 27, 84; sugar pine, 22, 73, 80, 82, 98, 114; western white pine, 22, 29, 44, 84, 98; whitebark pine, 21, 29, 33, 98. *See also* Jeffrey pine; ponderosa pine; prince's pine
Pinus albicaulis (whitebark pine), 21, 29, 33, 98
Pinus attenuata (knobcone pine), 31, 33, 73, 77, 81, 84
Pinus balfouriana (foxtail pine), 29, 31
Pinus contorta (lodgepole pine), 27, 84
Pinus edulis (twoneedle pinyon), 20, 251
Pinus jeffreyi. *See* Jeffrey pine
Pinus lambertiana (sugar pine), 22, 73, 80, 82, 98, 114
Pinus monticola (western white pine), 22, 29, 44, 84, 98
Pinus ponderosa. *See* ponderosa pine
Pinus sabiniana (gray or ghost pine), 22, 31, 33
pinyon pine, 20, 251

Synonymy and cross-referencing

Every plant or animal has one scientific name, and many have at least one common name. The text may use one or the other, or both; it may be consistent in its usage, or not. Synonymy and double posting are crucial in these indexes. All references to a particular plant or animal, by any name, should be gathered at every possible index access point, either through multiple posting or via cross references. No matter which name the reader is familiar with, s/he will find all references to the plant and recognize those references on the page. Unfortunately, clients sometimes won't allow this; I have one who insists that scientific names be indexed only to pages on which they actually appear, and common names likewise. Their editorial style is to use the scientific name just once on first mention of a plant in each chapter; the result in the index is fewer page references for scientific names than for the corresponding common names. The assumption is that anyone who knows the scientific name will (a) also know the common name and (b) realize that more page references may be found by looking it up. Neither of these is a safe assumption, in my opinion. Headnotes can help in these situations. An example I found on my bookshelf reads:

> Trees may be looked up by botanical or (selected) common names. Detailed indexing appears under the main common name used in this book.

Depending on the audience, indexers can decide whether scientific and common names will have equal weight as access points in the index, or one of the two will be primary. A recent project, a book about trees' significance to humans, never used scientific names in the text, and neither does the index. A list of scientific and common name equivalents at the end of the book provides certain identification for those who want it; someone who didn't know common names could go to that list first, then the index. But such readers will be rare.

Parenthetic glosses

As you see in the last example above, names may have parenthetic glosses, in both directions or only one:

adobe lily (*Fritillaria pluriflora*)
Fritillaria pluriflora (adobe lily)

adobe lily (*Fritillaria pluriflora*)
Fritillaria pluriflora

Glosses are a desirable kindness to readers. Scientific-name glosses for common names help because, while scientific names are specific, it isn't always clear which plant or animal a common name refers to. Glosses in the other direction help when common and scientific names do not always appear together in the text. In these situations, a reader looking up a scientific name may find only the common name on a particular page; if the common name is unfamiliar, readers won't find what they are looking for. Best indexing practice depends on reader knowledge – will most readers know both kinds of names? – and usage in the text.

Editors often don't want glosses used, and they can add greatly to index length. Sometimes if they won't appear in the index, I include them as I'm working anyway, and either hide them from printing or delete them before producing the final index file. This allows me to group on the scientific name, check page numbers, and double post in one fell swoop.

Classification issues

Biota names are taxonomic and classified by definition; those taxonomies lurk always unseen in the background, with implications for indexes. Taxonomies contain mutually exclusive categories. There is a finite group of names at any given taxonomic level, and readers may know all or most of them. If you have a list of subheadings for species names, there is an implication that the list is complete, and all species mentioned in the book appear as subheadings. When page references for a particular genus all occur within a few pages, this can lead to entries like this one with many subheadings for one page:

Angelica, 178
  breweri, 178
  hendersonii, 178
  leariloba, 178
  tomentosa, 178

Another facet of this is that text discussions, and page ranges in books that use a taxonomic organization (field guides), may pertain to any taxonomic level. You could rewrite the entries above like this:

Angelica species, 178 **or**
Angelica spp., 178 **or**
Angelica, 178

But this is misleading if the discussions are about species, not about the genus per se. Indexers must distinguish discussions of species from discussions of genera or vague groups of species, so that readers can find related information about different taxonomic levels. It should be clear in the index which taxonomic level the pages refer to. This can lead to complex name entries like this one, which mixes subentries for an imprecise genus-level (or higher) common name, two different genera, and a species:

Elm, 156, 160, 170, 182, 187, 236
  American *(Ulmus)*, 158, 221
  Asian *(Zelkova)*, 168, 191
  European *(Ulmus)*, 93, 168, 221
  Siberian *(U. pumila)*, 93, 219
Ulmus
  American elm, 158, 221
  Asian elm, 93, 168, 221
  pumila, 93, 219
  See also Elm
Zelkova, 168, 191
  See also Elm

This can be a special challenge for guides that are arranged taxonomically – typically by family, then genus, then species. Should locators for a taxonomic level refer only to specific discussions, or include the page range that covers all lower levels? Should there be subheadings for flower levels? In the following example, I gave the entire page range, but did not include subheadings. Instead, the cross-reference tells readers where to find entries for genera and species belonging to the family.

Corvidae, **194–197**, 288–289
  See also crows; ravens; *individual species*

Similar classification issues can arise when dealing with place names (which I'll discuss later) and geology, which also has hierarchies – of rocks and terranes. An example:

Franciscan Complex, 3, 49, 55–64
  (many subheadings)
  See also Franciscan mélanges; Franciscan terranes;
    geologic maps; *specific terranes and types of rock*

The cross-reference points to rocks which are categories under the Franciscan Complex.

Mixed subheading types

Often some subheadings will be species names and others will not, resulting in a mixed list of subheadings:

Acer (maple), 45, 71, 120–121, 236, 237
  diseases, 120–121, 208, 242, 256
  palmatum (Japanese maple), 6, 236, 252
  pests, 121, 147, 157, 167, 184, 195
  platanoides (Norway maple), 207, 256
  rubrum (red maple), 39, *44*, 45
  saccharinum (silver maple), 45, 157, 256
  saccharum 'Caddo' (Caddo maple), 51
  wind-resistant selections, 236

There's nothing wrong with this, but it can be difficult to navigate if the index is in run-in format or a main heading has a column or more of subheadings. In these instances it's helpful to find a creative way to make the species or cultivar subheadings stick together:

RUN-IN FORMAT:

Acer (maple), 45, 71, 120–121, 236, 237; diseases, 120–121; pests, 121, 147, 157
Acer species: *palmatum, 6,* 236, 252; *platanoides,* 207, 256; *rubrum,* 39, *44,* 45; *saccarinum,* 45, 157 [etc.]

INDENTED FORMAT WITH RUN-IN SUB-SUBHEADINGS:

Tomato, 119–138
  diseases, 120–122
  early-maturing varieties, 124
  pests, 122–123
  planting and care, 119–120
  varieties listed, 125–138; 'Beefmaster', 127; 'Brandywine', 127; 'Early Girl', 129; 'Green Grape', 130; [etc.]

These examples show why having ironclad rules for index and name format can be a bad thing. It's difficult to know what format and style will give the most usable, readable index until you're well into a text – because it depends on the scope and depth of the text.

Compound common names

Another thorny issue is that many common names are adjectival compounds: Norway maple, sword fern, coast live oak, Queen Anne's lace. Indexers have to decide whether to post names in natural-language order, invert the phrase, or do both and double post. Double posting is ideal, but space restrictions or house style may prevent this. If you must choose one or the other, it can't sensibly be done according to a rule – you have to make the choice on a case-by-case basis. 'Maple, Norway' is logical at 'N,' but 'lace, Queen Anne's' makes no sense. Are there several or many names that share the noun element of the compound, and if so will that noun need to appear as a main heading by itself? If so, you'll have to invert, especially if the noun is a genus common name and there are genus-level discussions in the text. This is standard style for field guides: all species common names listed only under the genus.

Oak
  canyon live oak
  coast live oak
  cork oak
  Engelmann oak
  pin oak
  scarlet oak

If the noun element is very generic in meaning, it makes sense to index uninverted, because the noun element is meaningless:

bear grass
Jimson weed
smoke bush

If the noun element is a common name for a genus, but the plant is actually unrelated, it's also best to stick with natural-language order:

mountain laurel
poison oak
wild buckwheat

These plants do not really belong to the conceptual categories 'laurel,' 'oak,' and 'buckwheat.'

Getting names into the index accurately

Typing scientific names can be slow and laborious or, if you're fast, error-prone. I resort to various tricks to minimize typing them as much as possible. Often I receive a PDF of the entire book, or a style guide in electronic format. These may have lists of plant names that can be cut and pasted into a format that can be imported directly into the index, saving a lot of time and eliminating the possibility of typing errors. Sometimes you can find a useful list of names on the Web somewhere, and grab that. These techniques are software- and project-specific, but the point is that there's usually a way to avoid typing every name. Here's one method I use. If I have a PDF, I open it in Adobe Reader and use the Select tool to highlight a list of names. I copy and paste it into an empty Word file. In the Word file, I can use Find and Replace operations to format it properly for import into Macrex. For scientific names, I have to remove italic formatting codes and replace them with carets. Sometimes there's nothing more to it than that. I can import the entire list into my new index without typing a single name.

More complex manipulations are often possible and desirable, especially for large projects. If the list has glosses, I might want to add coding to hide them from the printer before importing. If the information I need is in tabular format somewhere – in a PDF or on the Web – I can import it into Excel and manipulate it there, deleting columns, adding or changing formatting as needed, then exporting to a text file for import into Macrex.

Name lists like these are very useful for later projects. In Macrex, I can import a list from an old index to serve as the skeleton of a new one, either pulling the names in as actual index entries without page references, or using the list file as an authority file linked to the new index. When I finish a project with a lot of biota names, I often extract all the scientific names (it's easy to extract all italicized headings, then remove any which are not biota names) and save them in a new list file. Better yet, when I think of it, I add a hidden tag to every biota name – common or scientific – that allows me to easily extract all of them to a separate file. Either way, some or all of the names are now available when I get another project that covers some of the same territory. Spell-checking is another problem for indexes with a lot of biota names, and I believe you could also use lists like these to create spell-check dictionaries, although I haven't done so myself.

Reference authorities

If you do need to look up a name, these are some reliable online references:

- Integrated Taxonomic Information System (`www.itis.gov`)
- International Plant Names Index (`www.ipni.org`)
- USDA PLANTS database (`http://plants.usda.gov`)
- Wageningen "List of names of woody plants and perennials" (`www.internationalplantnames.com`)
- Thomson Reuters Zoological Record (`www.thomsonreuters.com/products_services/scientific/Zoological_Record`)
- Thomson Reuters Index to Organism Names (`http://organismnames.com`)
- The Gardening and Environmental Studies SIG resource page lists many other links to online dictionaries and databases (`www.bioindexing.org/resources.html`)

Regional or specialist databases can also be found online; Google for your area or topic.

The most important reference authority for any project is the one your editor is using, so ask what it is if it appears that you'll need to be checking name accuracy. For most projects, this isn't really an issue; in my experience authors in these fields tend to get names right, and you probably aren't being paid to research them anyway. When I come across a name that doesn't look right to me, I usually just Google it; if it appears to be wrong, I generally index it correctly and query it.

There is much more to be said about dealing with biota names; some of these issues are covered in more depth in my article 'Real-world considerations when indexing plant names' (Shere 2005).

Scope of text

A text's scope may be very narrow (one or a few plant or animal genera, a single ecological process or niche), very broad (the state of ocean fisheries worldwide, a complete encyclopedia of plant sciences), or anywhere in between. This will have implications, as in any subject area, for the scope and depth of indexing, and for the specificity of index headings. Here are some examples from a book with very narrow scope:

This guide covers just a few lizard genera and species. Because it's so narrow, most main headings are very specific. Each species gets a lengthy, developed main entry. Behaviors common to all species (respiration, rock mimicry) appear as main headings, not subheadings under 'behavior.'

The example below comes from a book with a broad ecosystem approach to a limited area, the Klamath Mountains of California and Oregon. This index is all over the map, with entries for biota (at genus and species levels); locations and geographic features; people and human activities; ecological niches and processes:

Clues to appropriate specificity emerge as you index. When I see main entries growing past six or eight subheadings as I'm working, I take it as a signal that my main heading may be too broad, and I begin to look for meaningful ways to break the entry up into a series of more specific main headings. This is good practice no matter what subject area you are working in; it makes the final index much more reader-friendly, with shorter entries so users won't get lost in long columns or paragraphs of subheadings. It also has the valuable benefit of forcing you to think hard about what the author is really talking about, and to make and understand subtle distinctions. This example comes from an encyclopedia with deep coverage of plant genetics:

Genes
  coding for proteins, **3:**81
  DNA structure, **3:***80*, 80–81, *81*
  Mendel's work proving existence of, **3:**33
  proof of carriage on chromosomes, **1:**157, 159, **2:**33–34
  quantitative trait loci, **3:**85, **195–196**
  study of. *See* DNA analysis; Molecular genetics;
    Molecular systematics
  transgenes, **2:**169–170
Genetically modified organisms (GMOs). *See* Genetic
  engineering; Transgenic plants
Genetic diversity, **1:**66
  food crops, **1:**8, 9, 12, **4:**48, 50
  rain forests, **4:**10
  seed/germplasm preservation, **1:**72, 99, **4:48–50**
  See also Biodiversity; Genetic variation; Species diversity
Genetic engineering (biotechnology), **1:**35, **2:168–172**,
  3:80, 84, **4:**12
  benefits and concerns, **2:**171–172
  crop plants, **1:**8–12, **2:**32–33, 168–169, **3:**24, **4:**170
  debate over, **2:**168, 171–172, **3:**85
  forest trees, **2:**155
  goals, **2:**166–167
  herbicide resistance, **2:**155, **3:**10
  pest resistance, **2:**32–33, 170–172, **3:**24
  plasmids in, **2:**120
  process, **2:**169–170, **4:**117–118
  seedless fruits, **2:**161
  transgenic plants, **2:**169, **3:**84–85
  unintended consequences, **2:**172
Genetic engineers, **2:166–168**
Genetic loci, **1:**157
Genetic mechanisms and development, **2:173–174**, **3:**80
  programmed cell death, **4:**56
  See also Differentiation and development; Genetics;
    Growth
Genetics, **4:**101
  Mendelian basis for, **3:**73, 75
  molecular plant genetics, **3:80–85**
  in Stalinist Russia, **4:**154–155
  Vavilov's work, **4:**152–155
Genetic variation, **1:**9, 66, **2:**134–135, **3:**84, 176
  agamospermy and, **4:**19
  genotypical vs. phenotypical variation, **2:**129
  homologous series, **4:**153
  rain forests, **4:**10
  sexual reproduction and, **4:**24
  transposons as source of, **1:**159
  See also Clines and ecotypes

However, if you are dealing with biota names and inflexible house styles, you will not be free to break up main entries for plants or animals in this way. The result may be entries for particular genera that run into multiple columns.

Geographic names and place hierarchies

The texts we're discussing often have a primary or secondary focus on place, tied as they are to the physical world. Different kinds of place names, often overlapping, are challenging in indexes. The same geographic name may refer to a city, a county, a park or two, and several geographic features. There may be photographs and maps which require indexing under their locations. Some examples, with subheadings deleted:

Marin County
Marin Headlands
Marin Headlands Terrane
Marin Islands

Sonoma, Lake
Sonoma Coast
Sonoma Coast State Beach
Sonoma County
Sonoma Valley
Sonoma Volcanics

One point about place names is that they are hierarchical in nature – any given place contains smaller places and features. I've already discussed the implications for indexes in the context of biota names. Hierarchies imply classification and mutually exclusive categories. There is some controversy about the use of classified subheadings – what Do Mi Stauber calls 'categorical subheadings' (Stauber, 2004: 149–53). Locational subheadings tend to be a natural way to divide up page number strings in these indexes, as in this example:

Marin Headlands Terrane, 65 (table), 201
  East Bay, 231, 241–242
  Marin County, 95, 96 (map), 99, 100, 126, 128
  North Bay, 269, 270 (map), 271
  Red Rock, 154
  San Francisco, 124 (map), 125, 126, 128
  South Bay, 199 (table), 201

This example mixes categorical subheadings for local fish stocks with other subheading types:

cod, 338
  Alaskan, 285
  Barents Sea, 239–40, 306, 313
  blue cod, 264
  Canadian inshore fishery, 123–27, 129
  climate change/warming impacts, 65, 109–10, 231–32,
    240
  cod wars, 46, 118, 229
  declines/current status, 215, 216

When you use subheadings like these to list categories, there may be an implication, as Stauber points out, that the list will be complete. Opinions and situations vary, but if you include *some* categorical subheadings, you may want to include *all possible* such subheadings. If you decide to be exhaustive, you may find yourself creating subheadings that are required only to make the list complete, as in the *Angelica* example above.

Exhaustive cross-referencing can be needed from bigger place names to smaller ones so readers will not miss references to those places-within-places:

Special text features: illustrations, maps, tables and lists, keys

These kinds of texts are often sprinkled with information-rich illustrations and figures. Plant lists, maps, photo captions, and identification keys contain some of the most useful information in a book, but we may be instructed not to index their contents. This is a disservice to readers, and when so instructed, I sometimes argue. If I prevail (and am being paid enough) I will index them at least up to a point. If 15 fish species appear on one page of an identification key, those appearances should be indexed. If there is detailed text discussion of the San Andreas fault, and it appears on several maps, those appearances should be indexed.

This can add greatly to both the work of indexing and the length of the index. A one-page plant list could easily mean 50 index entries; a rich map or a key can add ten or 20. Some information is just too much. An encyclopedia of fish species has several species per page; for each, its home streams or lakes are listed. In a situation like this, it simply isn't possible to index those streams and lakes, although it could well be useful information. Creative generic cross-referencing is sometimes a solution; under an entry for 'rivers,' you could add '*See also* specific streams and individual species descriptions,' or something along those lines.

Sometimes you can use the kind of copy, paste and tweak techniques discussed above for importing biota names for dense illustrations and figures as well, and that can save time.

Encyclopedia formats

These usually require index style decisions to be made jointly with the editor. Texts may be organized alphabetically, or by a specific taxonomic level (often families). For taxonomic organizations, decisions about inclusiveness of page ranges will need to be made, as mentioned above. For A–Z formats, will the alphabetized items be indexed at all? What if there is extra information located outside the A–Z section? If detailed encyclopedia entries for biota are indexed, how deeply should they be indexed – just the biota name? If so, how will readers find information other than the biota name? Ideally, indexing will be inclusive and in-depth, and that may make it very dense and detailed, adding time to the project and length to the index.

Conclusion

Except for biota names, the issues environmental and natural history indexers deal with arise in other subject areas as well. Subject expertise and familiarity with scientific nomenclature and typical text formats are very helpful when indexing in these fields, but not absolutely essential. My guiding philosophy for indexing best practices is the same as in any subject: make reader-friendliness and ease of use the primary goals, while accurately reflecting the text.

The Gardening and Environmental Studies Special Interest Group (`www.bioindexing.org`) offers a venue for discussion of indexing practices in these subject areas, as well as reference and marketing resources. Membership is open to members of ASI or any of its affiliated indexing societies; dues are $15.00/year.

References

Shere, T., with Burton, L. B. (2005) Real-world considerations when indexing plant names, in *Index it right: advice from the experts*, Volume I, ed. Enid L. Zafran, 83–107. Medford, N.J.: Information Today/American Society of Indexers.

Stauber, D. M. (2004) *Facing the text: content and structure in book indexing*. Eugene, Oreg.: Cedar Row Press.

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