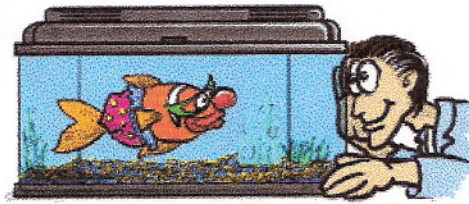


career information



Ichthyologist

Career Information

By Patricia Kutza

• If you've ever been fascinated by the creatures swimming around in the local lake, you may want to consider a career in ichthyology. While job prospects in 1999 and beyond aren't exactly rosy, you can make a go of it if you truly have a passion for fish.

Simply put, ichthyology is the study of fish. The observations and writings of Peter Artedi in the early part of the 17th century were so revered that Artedi became known as the father of ichthyology.

Some folks would not consider a trip to Washington, District of Columbia, complete without visiting the White House. For fish-loving folks their Washington mecca is the National Museum of Natural History at the Smithsonian Institution. Here resides the largest fish collection in the world, with approximately 500,000 lots (a lot consists of all the specimens of a species from the same time and place) and about 49 million specimens.

• Most ichthyologists are employed in academic institutions. Compared to other occupations that also require extensive years of training, their pay scale pales in comparison.

Yet a deep love for their work seems to more than compensate for a modest paycheck. Nadia Aubin-Horth remarks: "I can only say that if you love fish, being outdoors, challenges (physical, intellectual and emotional), [and] working in collaboration with other people, this job gives you a reason to get up every morning of your life with a smile on your face!"

According to Steven Norris, an ichthyologist at Miami University, "There are relatively few scenarios for working ichthyologists -- natural history museums, a university setting, or a government agency are the common ones. There are some environmental consulting firms that might hire an ichthyologist for a contracted project, but I can't think of any pure

Ichthyologist AT A GLANCE

*Studying and
researching fish*

- Most ichthyologists work in academic settings
- Job prospects are better in the applied research area
- You'll need at least a master's degree

ichthyologists who have done this."

He estimates that there are more than 1,000 people whose main focus is ichthyology working in university or agency positions which require broader work. He notes that "several thousand" positions may be filled by fishery researchers, whose job generally involves more applied science than what is done at the university level.

- **When working in the field,** ichthyologists may battle the elements as well as fatigue, sometimes working 16 to 18 hours a day. This schedule is in marked contrast to an academic position where the hours may look more similar to a traditional 40- to 45-hour workweek. This setting may bother those scientists with a deep love for pure research. They often feel frustrated by the time-intensive demands of teaching and committee obligations.

'I can only say that if you love fish, being outdoors, challenges (physical, intellectual and emotional), working in collaboration with other people, this job gives you a reason to get up every morning'

- **The Occupational Outlooks** suggests that increased competition for fewer grants stems from a glut of highly trained scientists in the marketplace. Opportunities for those willing to take jobs with more applied-research, sales or marketing responsibilities are expected to be better.

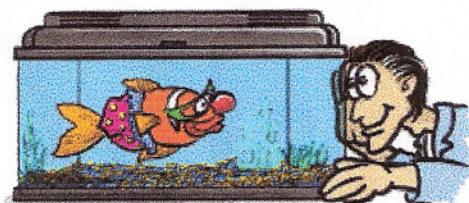
This is especially good news for applicants who come armed with only a master's or bachelor's degree in zoology or biology, as these positions may not require the doctoral degree necessary in an academic setting.

- **Norris** says the average academic ichthyologist's salary is "pretty much that of a university professor in life science [non-medical]. Most of these range, depending on the state and school types [private or public], from \$35,000 to \$45,000 per year for a starting position to \$60,000 to \$80,000 year for a 30-year tenured professor."

Education

No matter what grade of school you are currently attending, think in terms of preparation. What can you be studying now to pave the way for your future career? University of Minnesota ichthyologist Cheryl Murphy encourages students to "learn biology, chemistry and physics."

- **The conventional path for an ichthyologist begins with a biology or zoology major at the undergraduate level.** Ichthyology tends to be a master's degree specialty. Some ichthyology-related jobs in the applied-science arena can be had with only a bachelor's degree, but the bulk of the pure ichthyology work is done in academic institutions where a doctorate is expected.

career information**Ichthyologist*****Career Interview***

By Patricia Kutza

A famous and well-respected actor once said: "Follow your passion, the rest [money, security] will follow."

It seems to be a very reasonable piece of advice, yet many times what a person may be compelled to do simply doesn't make sense to their family and friends. Brett Rowley understands the feeling: "I have a love of fish, something very hard to explain to anybody that does not have it."

Rowley, a fish biologist, has been doing "very interesting things" with fish since his childhood spent in Japan. He has worked on a small family fish farm "where we produced over 30 species of warm-water fish and inverts mostly for stocking into lakes and ponds." He has also managed hatchery operations and fish production for a huge corporate catfish-producing farm, and managed a large corporate fishing retreat.

His responsibilities have included virtually the whole range of roles that an ichthyologist may be called upon to play, especially if she chooses to venture out in the applied-science area as Rowley has. He has supervised as many as 50 employees, designed and implemented fish farming techniques and provided consulting services to fisheries.

While Rowley admits to "learning a lot about dealing in the corporate world" from these experiences, it is his current work which is providing a great source of satisfaction. He manages his own farm, Brett's Fish Farm, which spawns, hatches, and rears the fish, as well as boarding other people's fish. "I get a strong feeling of accomplishment and sense of nearness to the creator."

Nadia Aubin Horth just needed a little

Maria Aubin-Horth just needed a little reminder to spark her desire to pursue this career. "I was vaguely thinking about doing a B.Sc. [bachelor's of science] in biology since high school to become an oceanographer. It was a film that my biology teacher showed us where a biologist explained his job and his research while standing with flies and mosquitoes turning around his head that gave me the final sign that I was made to do a job like this. However, my friend sitting beside me dropped the biology class after seeing what a horrible job this was!"

"I love working to help create a better understanding of fishes in general. If fish are appreciated, the environment they live in may also be appreciated, which can only help humans in the long run"

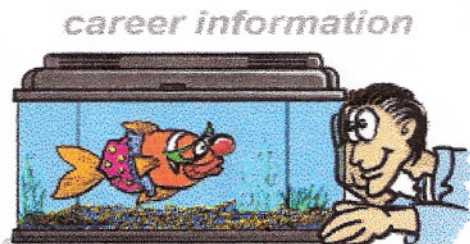
Aubin-Horth currently does research, but she has also taught fish ecology and planned and coordinated an experiment for North American scientists.

Her work experience has provided her with some valuable perspectives. "I didn't like mathematics much. I didn't understand what I could do with it as a biologist. To my surprise, I started to like working with mathematical models and statistics when it was to understand fish. Youngsters should know that even if they don't like some school subject, particularly math and chemistry, work hard because it will probably lead to very interesting things later."

Steven Norris, an ichthyologist at Miami University, also gets to be close to nature. That nearness can be troubling: "I see tremendous destruction and degradation of aquatic habitats when working in the field. I once traveled quite some distance to visit a certain large creek in which once a rich diversity of fishes had lived. We arrived and found the stream full of debris. There were hardly any fish at all. The bottom was littered with mussels. They were all dead, their shells gaping open to the sky."

Seeing this type of ecological destruction close up not only depresses field workers, but also inspires them to continue their work. "I enjoy trying to understand a glimpse of the magnificent complexity of the living world, and more down to earth, to understand what we humans can do to keep it going this way," says Aubin-Horth.

University of Minnesota ichthyologist Cheryl Murphy echoes Aubin-Horth's feelings. "I love working to help create a better understanding of fishes in general. If fish are appreciated, the environment they live in may also be appreciated, which really can only help humans in the long run."



Ichthyologist

Real Life Math

By Patricia Kutza

In the '90s, downsizing is a fact of life. So it comes as no surprise when two small natural history museums announce that they will consolidate their resources and merge into one larger museum.

Freshly hired as the head ichthyologist of the new museum, your first major task is to take stock of your inventory and present this data to the newly elected board of directors. Here are the facts the directors have asked to see:

How many total specimens comprise this new collection? What proportion of these come from Museum A, what proportion come from Museum B? What proportion of the total specimens are freshwater fish? reef fish? shell and deepwater fish?

Here are the raw numbers furnished by your staff:

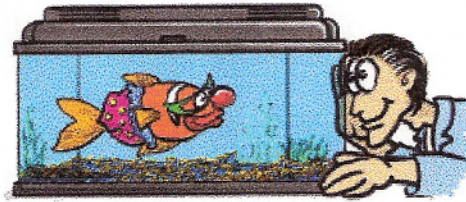
Museum A

40,000 freshwater specimens
300,000 shell and deepwater specimens
75,000 reef specimens

Museum B

200,000 freshwater specimens
50,000 shell and deepwater specimens
100,000 reef specimens

[Click here to see the solution](#)

career information

Ichthyologist

Real Life Decision

By Patricia Kutza

As the fisheries manager of a large corporation, you have a generous budget to invest in the latest technology. Plus, you have watched your initial investment of company stock quadruple in value over a very short time. Life is good.

You have gained much knowledge and invaluable experience from this job. Your friends call it the opportunity of a lifetime. Still, you can't shake the feeling that life is passing quickly. That "dream project" of starting and managing your own fish farm has been on hold much too long.

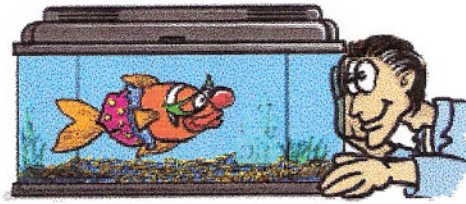
It is time to make a decision. You see two options: you can continue to work at this large corporation, or you can quit and open your own fish farm. If you choose the first option, you may continue to benefit from its extensive facilities, even a fabulous cook at your beck and call! You will most likely continue to have carte blanche authority to test and develop your pet programs on the three acres worth of lakes and 10-acre hatchery located on some of the most attractive property on the continent. The board of directors is even talking about paying you a bonus towards the eventual development of your fish farm. Plus, rumor has it that the boss is poised to offer you the prized position of general manager.

If you choose the second option, all those support duties (secretarial, hatchery) you're accustomed to delegating may now fall squarely on your shoulders. Forty-hour weeks will probably grow to 75. You may have to make compromises when it comes to buying the best technology has to offer. Yet the possibility of pure joy is there -- seeing your "dream project" grow wings and fly!

Which option will you choose?

- [Do you continue to work at this large corporation?](#)
- [Do you quit and open your own fish farm?](#)

career information



Ichthyologist

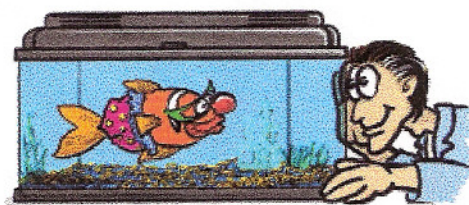
By Patricia Kutza

You continue to work at the large corporation.

The corporation continues to thrive. Because your vision remains consistent with that of the board of directors, you are showered with perks and a guaranteed contract for employment until the year 2035.

Still, you always wonder if you should have taken the risk of opening your own fish farm. While you love your job, you can't say that you're excited by it. While you'll always be secure, you'll never be excited to go to work in the morning.

Fish biologist Brett Rowley did take the risk and quit his secure job. He advises: "Follow your heart and don't look back. I do not know any 'wealthy' fisheries scientists. I also don't know any unhappy ones."

career information**Ichthyologist**

By Patricia Kutza

You quit and open your own fish farm.

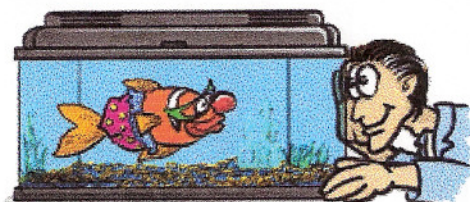
This is the real life decision made by fish biologist Brett Rowley.

As the fisheries manager of a large corporate fishing retreat, Rowley had the means to really develop his skills. "During that time, I developed the fishery into a very unique one from which many large fish were easy to catch."

When he was hired, Rowley built a conditional clause into his contract. The corporation had to invest money and facilities towards his "dream project," the fish farm. Rowley says that he "learned a lot about dealing in the corporate world," and eventually became a general manager. He never did take a liking to that position and quit.

Now he seems to have the best of both worlds. He works part time as a consultant to the retreat, and with the remainder of the time he consults other fish-related businesses. All the while he's growing his fish farm.

Rowley remarks: "I have the sunrise and the sunset for my own, and see them both. My office is as big as all outdoors. My time spent studying the intricacies of life in the water has been rewarding beyond my wildest dreams. Had I the chance to do it again, I'd do it all the same."

career information**Ichthyologist*****Real Life Communications***

By Patricia Kutza

Ichthyology collections span the globe. Most of them can be found in museums of natural history. The museum for which you work contains a wide variety of fish. Below you will find a very specific description of its collection.

As an ichthyologist employed by the museum, you are asked to compose a 200-word summary of the collection which will be used as the text of a pamphlet. This pamphlet will be given to visitors on tours of the museum.

Your summary needs to answer the following questions:

How many specimens does the museum have in total (sorted and unsorted)?

From whom did the museum acquire most of the uncataloged backlog material?

Why would the museum now warrant recognition as an international center?

Use this research to answer those questions:

Description of the Collection

The ichthyological collection was ranked as the tenth most important fish specimen resource in North America and the second-highest ranking national center. Since that survey was completed, another 65,000-lot collection was transferred and is being integrated into the collection. The museum may now warrant recognition as an international center.

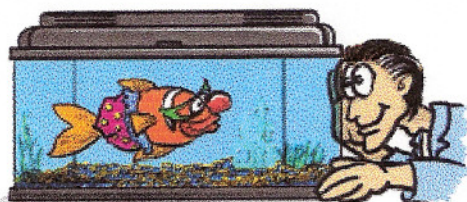
The collection contains 135,000 catalogued lots (about 1,350,000 specimens), plus approximately 70,000 identified and labeled, but uncataloged lots (about 700,000 specimens) shelved alongside the former. We have not been able to formally catalogue these lots because of manpower constraints, but they are readily available for study. In addition, there is an unsorted

backlog of about 25,000 lots (about 250,000 specimens). Most of the uncataloged and backlog material was acquired through transfer of the important collections previously housed at the federal biological laboratories. The collection contains primary and secondary types of more than 325 types of freshwater and marine fishes.

The osteological collection comprises 2,500 lots of disarticulated skeletons representing over 320 species. Skeletal holdings emphasize the southeastern United States, Caribbean, Central American and northwestern South American ichthyofaunas. Representative specimens of over 200 species have been cleared and stained. A radiograph collection and the original field notes of numerous individuals and organizations are maintained.

[Want to see the answers?](#)

career information



Ichthyologist

By Patricia Kutza

You've been asked to research key information for a pamphlet on the Florida Museum of Natural History. After doing your research, you are now able to answer the following three questions:

How many specimens does the museum have in total (sorted and unsorted)?

From whom did the museum acquire most of the uncataloged backlog material?

Why would the museum now warrant recognition as an international center?

1. Your research found that there are 1,350,000 cataloged specimens, 700,000 identified and labeled specimens and an unsorted backlog of about 250,000 specimens.
2. The museum was given the uncataloged backlog from the National Marine Fisheries Service biological laboratories in Miami, and Pascagoula, MS, and the University of Miami. (Don't forget to thank them in the pamphlet!)
3. The museum may very well now warrant international center status because it has recently acquired the University of Miami collection.

As an ichthyologist, you will often have to extract key points from large volumes of written material. As Steven Norris comments: "To remain a viable part of the scientific community, you need to keep up with your specific field by reading journals and attending meetings. And you need to remain productive by publishing papers."

Would you like to read about the contents of another collection?

Texas Memorial Museum - Ichthyology

Internet: <http://www.utexas.edu/depts/tnhc/www/fish/>