

COUNCELOR GUIDE

FISH AND WILDLIFE MANAGEMENT MERIT BADGE



The FISH AND WILDLIFE MANAGEMENT Merit Badge (FWMMB)

Fish and Wildlife contribute so much to our well being. Without them, our lives would be much less colorful and exciting. Who can dispute the awe we feel when we see our first whale, grizzly bear, moose or dolphin? Even though we may not always be aware, we are enriched by the fish, wildlife and plants that surround us in our daily lives.

Fish and wildlife are a biological proxy to help us understand, measure and protect the quality of our environment. To survive, all animals need food, water, shelter and suitable living space. Plants similarly need favorable climate conditions to grow and provide food for the many animals dependant upon them. As the human population continues to grow, more and more wildlife are being displaced as more land is used for buildings, highways and other developments. Human pollution is also a major factor impacting all of our biotic resources.

This merit badge helps a Scout understand fish and wildlife life cycles, habitat requirements, predator-prey relationships, natural succession, competition and a host of other fish and wildlife management principles. For the Scout who truly masters these concepts, a career in the fish and wildlife management field is a reachable possibility. For others, they may very well have an opportunity to pursue a hobby with greater understanding and appreciation for the wild things that share this globe with us.

The Fish and Wildlife Management Merit Badge is not an easy merit badge to earn. With 8 requirements and multiple options, the Scout is challenged to undertake projects that may take several months to complete. From the very start, a Scout should be encouraged to keep a large three ring binder to organize all materials that apply to each requirement. Keeping everything together will help the counselor monitor progress and perhaps help the Scout resolve issues impeding completion.

In order to work with Scouts to counsel a merit badge, you first need to register with the BSA. A potential merit badge counselor must complete BSA's Adult Application form (No. 28-501Y) and submit it along with the BSA Merit Badge Counselor Information

form (No. 34405). Your local Scoutmaster can help you obtain and fill out these registration forms.

Anyone of good character can be a merit badge counselor. If you are over the age of 18 and have the skills to teach fish and wildlife management principles, you can become a merit badge counselor for this merit badge. You should also have the patience and skills to work with Scout-age boys and girls. Merit badge counselors are critical to success of BSA's merit badge program. They offer their time, experience and knowledge to help guide Scouts in one or more of the merit badge subjects.

BSA also recommends strongly that you complete the on-line Youth Protection Training prior to working with Scouts. Note that this program addresses strategies for personal safety for youth as well as adults. Youth Protection includes training for "two-deep leadership" where an adult is not allowed to interact singly with a Scout. In addition to no one-on-one Scout-adult interaction, adult leaders are taught to respect a Scout's privacy and to report potential problems or infractions.

Only an authorized counselor may sign off on the Scout's completed work on each of the merit badge requirements. A Fish and Wildlife Management Merit Badge pamphlet (SKU 35898) is available for purchase at the local council's Scout Store or on-line at: <http://www.Scoutstuff.org>. You can find the most current requirements for the FWMMB and also a Merit Badge Primer video that describes the merit badge process on the National BSA web site: <http://www.Scouting.org>. Just conduct a search for "Merit Badge".

It is important to realize that the merit badge program is based on the Scout learning the skills needed to become competent in the subject merit badge. For the FWMMB, the Scout does not need to become an expert fish and wildlife specialist in order to earn a merit badge. **It is also important to note that a merit badge counselor is not to change, or deviate in any way, from the established requirements in the Fish and Wildlife Management Merit Badge (F&WMMB) pamphlet.**

The merit badge counselor will:

- Assist the Scout as he or she plans the assigned projects and activities to meet the merit badge requirements.
- Coach the Scout through interviews and demonstrations on how to do the required skills of the craft, business, or hobby.
- Follow the requirements of the merit badge, making no deletions or additions, ensuring that the advancement standards are fair and uniform for all Scouts.
- Certify the Scout after determining whether he or she is qualified for the merit badge.

Once contact has been established with the Scoutmaster or the Scouts, the counselor will develop a program schedule convenient to all. Be aware that the Scouts may arrive at the first session knowing little or nothing about fish or wildlife or their associated habitats. The Scouts may or may not have read the F&WMMB booklet or may have a booklet that is not current. Because the requirements have changed slightly over the years, it is the responsibility of the F&WMMB counselor to obtain and follow the most current requirements. The most up-to-date requirements are available online at <https://www.scouting.org/programs/scouts-bsa/advancement-and-awards/merit-badges/>.

Remember, the Scouts may arrive with little or no preparation. Some Scouts may show up to simply earn another merit badge, learn something about fishing, hunting, birding or just accompany a pal who wants to earn the badge. Many youngsters have never held a squiggly worm, a snail, snake, or a live fish before so be ready to guide the process so someone doesn't get bit by an angry critter!

Above all, your job as counselor is to bring enthusiasm, knowledge and skill to each session and transfer those abilities to the Scouts. By the time you are finished, each of your Scouts should be equally enthusiastic about fish and wildlife management and be grateful to you for taking the time and effort to teach them this scientific discipline. Make the time with the Scouts safe, fun and exciting.

It is recommended that you bring any specialty equipment with you. If you are going to do wildlife observations, ask the Scout if they can bring their own binoculars. Still, relying on the Scouts to bring their equipment is a mistake, so have spares ready to go. Remember they are kids and they also have a lot on their plate. If they have any equipment at all, Scouts may bring such a diversity of stuff that by the time you straighten it out, you will lose the attention of the other Scouts.

Remember, to earn the FWMMB, Scouts do not have to become experts in the field. Your job is to bring them to a level of competence that allows them to successfully understand basic fish and wildlife management principles and have fun doing so. Keep your instruction in simple modules and keep your program moving to prevent boredom and distractions.

Requirements

Each requirement will be addressed individually with tips and points offered to help you become oriented to the tasks required of each Scout. The FWMMB booklet, available at all BSA Scout Shops, covers each of the points in the requirements so the counselor is encouraged to read it thoroughly before interacting with Scouts. The latest requirements are also listed in the annual Boy Scout Requirements publication (#35899). Preparation, flexibility and a great attitude are the keys to success of any merit badge counselor.

1. Describe the meaning and purposes of fish and wildlife conservation and management.

The purpose of fish and wildlife management is to encourage healthy fish and wildlife populations and their associated habitats while preventing lost populations and additional extinction of plants and animals. In order to accomplish this goal, a manager must first understand and address individual species habitat requirements, associated predator-prey relationships, and other physical and biotic factors, most of which are dynamic, that influence the success or failure of a fish or wildlife population. Healthy populations are part of healthy communities and key to the success of one often relies on productive and viable habitats.

A second purpose is to have sustainable fish and wildlife populations that can provide for human appreciation, recreation and harvest for millions of Americans. The economic benefit of the above interests represents billions of dollars annually and many thousands of jobs for those who engage or support these activities.

The counselor might lead a discussion to draw out these points and encourage the Scouts to add to or embellish each point.

2. List and discuss at least three major problems that continue to threaten your state's fish and wildlife resources.

The most common problems shared by most states are pollution, over-harvest of some species, over-population of some species, habitat fractionation, degradation or loss due to development and encroachment by humans. Other issues include wildlife disease and introduction of exotic or invasive species. Another big problem is funding. Fish and Wildlife managers often can address only the major issue of the day because many states are experiencing severe funding constraints.

The merit badge councilor is encouraged to contact the local state district fish and wildlife biologist to see if he or she might be interested in meeting the Scouts to discuss specific issues or problems they may be dealing with currently. Not only does this give local importance to this requirement, it also gives an opportunity for the Scouts to see firsthand someone in the fish and wildlife management profession. Also, as the Scout moves through the remaining requirements, the experience of meeting with the local fish and wildlife manager might lead to enhanced experiences and make earning this badge all the more rewarding. If the district biologist is not available, knowledgeable personnel from a nearby National Wildlife Refuge or National Park or National Forest should be able to provide similar support.

3. Describe some practical ways in which everyone can help with the fish and wildlife conservation effort.

The counselor can lead a discussion on ways people can help with fish and wildlife conservation. Some ideas to kick off this dialog can be found by asking the Scouts how they might become better informed on the major fish and wildlife issues confronting their local fish and wildlife managers. Again, the meeting with the district fish and wildlife biologist will provide focus on specific issues that need addressing locally.

The discussion might address not disturbing wildlife and other ways to minimize conflicts with wildlife such as by following fish and wildlife regulations and adhering to Leave No Trace principles when afield.

Some other ways for Scouts to become involved include reporting any wild animal that may be acting strangely or exhibiting threatening or aggressive behavior. Such animals may be rabid or have diseases that could well cross over to humans.

4. List and describe five major fish and wildlife management practices used by managers in your state.

The counselor can help the Scout focus on some common fish and wildlife management practices. The idea here is "what do fish and wildlife managers do to enhance wildlife for the benefit of people".

*For example, conducting **fish and wildlife population surveys** to determine what is out there and well being of various populations. Population assessments often determine how many fish and wildlife can be harvested (**hunting and fishing**) safely without impacting significantly a given population. These data are used commonly in promulgating fish and wildlife regulations and lead to other management prescriptions like **stocking or relocating of fish or wildlife, controlled burns** and similar **plant succession strategies, selective harvest, habitat enhancements, provide safe corridors and refuges, creation of nesting structures and artificial fish attractors.***

5. Do one of the following:

- a. Construct, erect, and check regularly at least two artificial nest boxes (wood duck, bluebird, squirrel, etc.) and keep written records for one nesting season.**

For a counselor talented in woodworking, this is an ideal project. Most Scouts would love to build nest boxes and set them out. Besides the local district wildlife biologist, another good resource might be a local Ducks Unlimited chapter as they commonly are involved tending nesting boxes for wood ducks.

The F&WMMB booklet has instructions for building a nesting box for bluebirds. Bluebirds have quite a following and there are clubs that set up and maintain

bluebird boxes along trails. Some of these clubs would be excited to have Scouts become involved in this outdoor activity.

Don't forget bat boxes! Some bat species take well to nesting boxes built to address their specific needs. Plans for their construction can be found on the Internet or by searching the U.S. Fish and Wildlife Service website.

The idea here is to get started early and be ready when the "early" bird comes seeking suitable nesting structures in the Scouts' local area. Note that some birds nest several times during a season, so don't let a Scout become discouraged should the nest remain vacant or becomes occupied by a sparrow or another species. There is always next year. Still the Scout can learn from the experience and that is what really matters in addressing this requirement.

b. Construct, erect, and check regularly bird feeders and keep written records of the kinds of birds visiting the feeders in the winter.

There are all sorts of bird feeders and building them can be creative and great fun. Give birds a free meal and they will come - so will the squirrels! Have a good bird guide available and help the Scout identify the various species of birds visiting the feeder.

Be aware that some predators habituate to feeders as well. It is not uncommon to see a hawk swoop in and take an unsuspecting bird. While this may not be the plan, it could be an unintended consequence of man intervening with natural processes. Again, this kind of observation might well be another "teaching moment" on the dynamics and harsh reality of the natural world.

c. Design and implement a backyard wildlife habitat improvement project and report the results.

This sub-requirement can take on many forms based on the "backyard" area available to the Scout. In smaller urban yards, perhaps the Scout could erect a birdbath or small bird feeder. In more rural areas, the Scout might build some brush piles from used Christmas trees or other discarded brush.

In some areas, picking up the trash in a vacant lot might be a worthwhile project. Getting debris off the land will surely benefit wildlife in some way and the local community will also be appreciative.

With a landowner's permission, the Scout, after doing some research, might plant certain trees or shrubs that have wildlife value. Avoid exotic or invasive plants. Some native flowering plants can attract butterflies, hummingbirds and other forms of wildlife.

- d. Design and construct a wildlife blind near a game trail, water hole, salt lick, bird feeder, or birdbath and take good photographs or make sketches from the blind of any combination of 10 wild birds, mammals, reptiles, or amphibians.**

While this activity can be great fun and exciting, be careful in the placement of the blind. The counselor should be aware that wildlife is indeed wild and some animals, especially larger ones, can be aggressive even if they don't know they are being observed. While a bird feeder or birdbath might not be particularly dangerous, placing a blind in an area frequented by mega-fauna (bear, buffalo, moose, elk, etc.) might prove to be a bit more risky.

If an elevated/tree-stand blind is used, be sure to have the Scout harnessed in to prevent falling. Windy and wet weather might also be factors to consider.

6. Do one of the following:

- a. Observe and record 25 species of wildlife. Your list may include mammals, birds, reptiles, amphibians, and fish. Write down when and where each animal was seen.**

This is a fun opportunity for an outing. While the ideal setting might be a visit to a national wildlife refuge, a national park or forest. However, many urban parks offer a broad array of habitat types and considerable diversity of wild animals if you are patient, quiet and willing to carefully observe them. Be sure to have binoculars or a spotting scope available to search for distant or secretive animals resting or going about their daily activities. Note, many animals increase their activity just after dawn and just before sunset. Going to different habitat types may also reward you with observations of very different species.

- b. List the wildlife species in your state that are classified as endangered, threatened, exotic, game species, furbearers, or migratory game birds.**

Often, this information can be found on the state's fish and wildlife's website.

- c. Start a scrapbook of North American wildlife. Insert markers to divide the book into separate parts for mammals, birds, reptiles, amphibians, and fish. Collect articles on such subjects as life histories, habitat, behavior, and feeding habits on all of the five categories and place them in your notebook accordingly. Articles and pictures may be taken from newspapers or science, nature, and outdoor magazines, or from other sources including the Internet (with your parent's permission). Enter at least five articles on mammals, five on birds, five on reptiles, five on amphibians, and five on fish. Put each animal on a separate sheet in alphabetical order. Include pictures whenever possible.**

The 3-ring binder mentioned earlier in this document will be particularly handy for this sub-requirement. Most hunters and anglers will have an abundance of old fish and wildlife magazines and be willing to share them with a Scout seeking the FWMMB.

7. Do one of the following:

a. Determine the age of five species of fish from scale samples or identify various age classes of one species in a lake and report the results.

Learning to read a fish scale takes a bit of practice. There are false annuli or false rings that can mislead someone looking at a fish scale up close for the first time. In general, only the darker well-defined ring should be counted as an annual ring. The lighter less-defined marks between the annual rings aren't necessarily the result of annual growth.

While it may vary, fishery biologists take scales from a consistent area generally along the fish's side just above the lateral line and about even with the beginning of the dorsal fin. If careful, a few scales can be removed easily and safely from a fish by scraping a small area with a pocket knife. The fish can then be released to re-grow the scales. The Scout should record carefully the date, geographic location and the fish species and insert this valuable information on the container holding the scales.

Having a microscope or dissecting scope helps to see some of the detail particularly on small fish scales like those found on some trout species. Perhaps your high school biology teacher might offer this equipment to use if you explain that the Scout is doing a project to earn the FWMMB.

b. Conduct a creel census on a small lake to estimate catch per unit effort.

While you may be able to undertake this task by yourself, this project can best be done by working with a local fishery biologist. If given enough lead time, these biologists routinely conduct field surveys and having Scouts help out makes the process all the more rewarding.

If you can't connect with the local biologist, go to a small popular fishing lake and interview anglers. On lakes with a boat ramp, station yourself by the ramp as anglers return from a day of fishing. Be careful not to get in the way of moving boats or retrieving vehicles. After telling each angler what you are doing and why, ask them for permission regarding their day's catch. Ask them how many hours they have been fishing, how many and what types of fish they have caught. Using basic mathematics, divide the number of fish of a given species by the number of hours fished to come up with catch per unit effort (CPU) for that species.

- c. Examine the stomach contents of three fish and record the findings. It is not necessary to catch any fish for this option. You may visit a cleaning station set up for fishermen or find another, similar alternative.**

Many popular fishing locations have a facility to clean fish and discard properly the fish's entrails. Scouts can go to one of these stations and wait for anglers returning from a day of fishing. Again, they should explain what they are doing and ask if they might conduct a brief stomach analysis. Sometimes anglers want to find out this information as well to help them determine what baits to use on their next fishing trip.

It might not be a bad idea to use latex gloves when touching the entrails. Bring a clean cutting board, a sharp knife and tweezers. A magnifying glass, a bottle of water and a white plate or dish are often helpful for a detailed examination of stomach contents.

- d. Make a freshwater aquarium. Include at least four species of native plants and four species of animal life, such as whirligig beetles, freshwater shrimp, tadpoles, water snails, and golden shiners. After 60 days of observation, discuss with your counselor the life cycles, food chains, and management needs you have recognized. After completing requirement 7d to your counselor's satisfaction, with your counselor's assistance, check local laws to determine what you should do with the specimens you have collected.**

Note that this is a long-term effort (60 days) and requires some planning. There will be a need for some basic equipment including a tank, an aerator and some filters.

Releasing animals back into the wild is rarely a good idea because of the transfer of exotic or invasive species or bacteria/viruses. To prevent spreading disease, some states require a permit to release any fish or wildlife. If the Scout does not want to continue their aquarium, they should be encouraged to discard their living organisms, including the water, onto a compost pile or directly into the family's flower garden. The tank can be properly sanitized with a diluted bleach solution, dried and put away.

- 8. Using resources found at the library and in periodicals, books, and the Internet (with your parents' permission), learn about three different kinds of work done by fish and wildlife managers. Find out the education and training requirements for each position.**

The FWMMB booklet has a section on Careers in Fish and Wildlife Management. There is also an extended list of possible and quite varied occupations within this career discipline. Each of these fields have their own set of requirements strongly based in biology, mathematics, science, writing, and oral communication.

If a Scout is truly interested in pursuing a career in fish and wildlife, they should be encouraged to write to a person in the specific discipline asking for some firsthand advice on how they might proceed. Most fish and wildlife personnel are quite proud of what they are doing and welcome inquiries of this sort.

Although competitive, fish and wildlife jobs do exist at all levels of government. In addition, lots of private conservation organizations also hire fish and wildlife specialists. Again, the best students and professionals get hired first. Getting experience early on may help secure one of these positions so taking on a summer internship working in the fish and wildlife profession is strongly suggested.

Resources

Scout Handbook; Fieldbook; Animal Science, Bird Study, Camping, Environmental Science, Fishing, Fly Fishing, Forestry, Insect Study, Mammal Study, Nature, Oceanography, Pets, Reptile and Amphibian Study, Soil and Water Conservation and Veterinary Medicine merit badge pamphlets.

Books

- Arnoosky, Jim. *Field Trips: Bug Hunting, Animal Tracking, Bird Watching, Shore Walking*. HarperCollins Publishers, 2002.
- Behler, John. *Reptiles*. (The National Audubon Society First Field Guide). Scholastic Trade, 1999.
- Boschung, Herbert T., et al. *The National Audubon Society Field Guide to North American Fishes, Whales and Dolphins*. Alfred A. Knopf, 1983.
- Page, Lawrence M. and Burr, Brooks M. *Peterson Field Guide to Freshwater Fishes of North America North of Mexico, Second Edition*. Houghton Mifflin Harcourt Publishing Company, 2011.
- Cassie, Brian. *Amphibians*. (The National Audubon Society First Field Guide). Scholastic Trade, 1999.
- Chinery, Michael, ed. *The Kingfisher Illustrated Encyclopedia of Animals: From Aardvark to Zorille – and 2,000 Other Animals*. Kingfisher Books, 1992.
- Forsyth, Adrian. *Mammals of North America: Temperate and Arctic Regions*. Firefly Books LTD, 1999.
- Griggs, Jack, ed. *All the Birds of North America: American Bird Conservancy's Field Guide*. HarperCollins, 1997.

- Leopold, Aldo. *A Sand County Almanac*, re-issue ed. Ballantine Books, 1990.
- Manooch III, Charles S., and Duane Raver Jr. *Fisherman's Guide: Fishes of the Southeastern United States*. North Carolina State Museum of Natural History, 1984.
- Maynard, Thane. *Working With Wildlife: A guide to Careers in the Animal World*. Orchard Books, 2000.
- Sayre, April Pulley. *Put On Some Antlers and Walk Like a Moose: How Scientists Find, Follow, and Study Wild Animals*. Millbrook Press, 1997.
- Sousa, Robert J. *Learn to Fly-Fish in 24 Hours*. McGraw-Hill, 2006.
- Sousa, Robert J. *The 24 Greatest Flies*. Husking Bee Books. 2010.
- Vergoth, Karin, and Christopher Lampton. *Endangered Species*. Scholastic Library Publishing. 2000.
- Wernert, Susan J., ed. *Reader's Digest North American Wildlife*. Reader's Digest Adult, 1998.

Selected Fish and Wildlife Organizations

International Game Fish Association

300 Gulf Stream Way
 Dania, FL 33004
 Telephone: 954-927-2628
 Web site: <http://www.igfa.org>

Leave No Trace Center for Outdoor Ethics

P.O. Box 997
 1830 17th St., Suite 100
 Boulder, CO 80304
 Toll-free telephone: 800-332-4100
 Web site: <http://www.lnt.org>

Trout Unlimited

1300 N. 17th St., Suite 500
 Arlington, VA 22209
 Toll-free telephone: 800-834-2419
 Web site: <http://www.tu.org>

U.S. Fish and Wildlife Service

Main Interior
 1849 C St., NW
 Washington, DC 20240
 Web site: <http://www.fws.gov>

American Fisheries Society, web site: <http://www.fisheries.org>

American Birding Association, Web site: <http://www.americanbirding.org>

National Audubon Society, Web site: <http://www.audubon.org>

National Marine Fishery Service, Web site: <http://www.nmfs.noaa.gov>

National Wildlife Federation, Web site: <http://www.nwf.org>

National Zoological Park, Web site: <http://www.nationalzoo.si.edu>

Recreational Boating and Fishing Foundation: <http://www.rbff.org>

The Nature Conservancy, Web site: <http://www.nature.org>

Wildlife Conservation Society, Web site: <http://www.wcs.org>