

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

# What Species Can I Raise?

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Ohio Center for Aquaculture Research and Development

OSU South Centers

Piketon, OH

Bringing Knowledge to Life



# Getting Started in Aquaculture

1) Learn about the aquaculture industry

Is Aquaculture for you?

2) Assess your goals and resources

3) Determine what system to use

**4) Select your species**

5) Construct your business plan

6) Conduct a pilot operation

# Species Choices

## Food Fish

- Yellow Perch
- Trout
- Tilapia
- Bluegill/Hybrids
- Largemouth Bass
- Hybrid Striped Bass
- Freshwater Prawn
- Paddlefish
- Barramundi

## Sportfish/Pond stocking

- Largemouth Bass
- Catfish
- Yellow Perch
- Trout
- Bluegill/Hybrids
- Striped Bass
- Baitfish
- Ornamentals
- Aquatic Plants



# Permits

## Class A

Division of Wildlife  
Ohio Department of Natural Resources  
**AQUACULTURE PERMIT APPLICATION**

**PRINT OR TYPE**

Full Name of Applicant		Telephone (area code)	County
Street Address		City	State Zip Code
Business Name			
Culture Facility Address		City	State Zip Code
Email Address		Social Security Number	
Does Applicant Now Hold a Valid Ohio Lake Erie Commercial Fishing License? <input type="checkbox"/> Yes <input type="checkbox"/> No		Commercial License Number	Type of Commercial Fishing Gear Used

I DO  I DO NOT want my name listed as a propagator of fish for stocking. Your name will not be included on the propagators list if the application is not received before March 1 and only Division of Wildlife recommended species for pond stocking are included on this list.

**CLASS A AQUACULTURE PERMIT (\$50)**

Includes the following permits at no charge, please check the permits you need.

Bait Dealer Permit (see Publication 5330)

Type of bait to be collected and/or sold:  Minnows  Hellgrammites  Crayfish

Fish Transportation Permit (see Publication 5002)

Class A Permit Applicants - it is unlawful for any person possessing a Class A aquaculture permit to possess, buy, and sell any aquatic species for the purpose of aquaculture, except for "Class A Species" (see Publication 5061 for Class A Species list and permit conditions). Send completed form and payment to the appropriate district office (see map).

Select Class A species to be produced for sale, or attach an addendum if not listed below:

- |  |   |
|--|---|
| <input type="checkbox"/> Largemouth Bass ( <i>Micropterus salmoides</i> )  | <input type="checkbox"/> Bluegill Sunfish ( <i>Lepomis macrochirus</i> )              |
| <input type="checkbox"/> Rodear Sunfish ( <i>Lepomis microlophus</i> )   | <input type="checkbox"/> Green Sunfish ( <i>Lepomis cyanellus</i> )                   |
| <input type="checkbox"/> Hybrid Bluegill Sunfish ( <i>Lepomis cyanellus</i> x <i>Lepomis macrochirus</i> )                         | <input type="checkbox"/> Black Crappie ( <i>Pomoxis annularis</i> )                   |
| <input type="checkbox"/> White Crappie ( <i>Pomoxis nigromaculatus</i> )   | <input type="checkbox"/> Channel Catfish ( <i>Ictalurus punctatus</i> )               |
| <input type="checkbox"/> Yellow Perch ( <i>Perca flavescens</i> )  | <input type="checkbox"/> Common Carp ( <i>Cyprinus carpio</i> )                       |
| <input type="checkbox"/> Rainbow Trout ( <i>Oncorhynchus mykiss</i> )  | <input type="checkbox"/> Tilapia ( <i>Oreochromis</i> spp.) or ( <i>Tilapia</i> spp.) |
| <input type="checkbox"/> Freshwater Shrimp ( <i>Macrobrachium</i> spp.) or ( <i>Palaemonetes</i> spp.)                             | <input type="checkbox"/> Goldfish ( <i>Carassius auratus</i> )                        |
| <input type="checkbox"/> Hybrid Striped Bass ( <i>Morone chrysops</i> x <i>Morone saxatilis</i> ) (within the Ohio River drainage) |   |

**CLASS B AQUACULTURE PERMIT (\$100)**

Includes the following permits at no charge, please check the permits you need.

Bait Dealer Permit (see Publication 5330)

Type of bait to be collected and/or sold:  Minnows  Hellgrammites  Crayfish

Fish Transportation Permit (see Publication 5002)

Class B Permit Applicants - it is unlawful for any person to engage in the propagation, rearing, or sale of a "Class B Species" for the purpose of aquaculture without first obtaining a Class B aquaculture permit (see Publication 5061 for Class B Species list and permit conditions).

List common and scientific names of Class B species to be produced for sale or attach an addendum: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- Largemouth Bass
- Red ear Sunfish
- Hybrid Bluegill
- White Crappie
- Yellow Perch
- Rainbow Trout
- Freshwater Shrimp
- Hybrid Striped Bass
- Bluegill Sunfish
- Green Sunfish
- Black Crappie
- Channel Catfish
- Common Carp
- Tilapia
- Goldfish

# Permits

## Publication 5061



OHIO DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF WILDLIFE

Publication 5061  
(R1114)

### AQUACULTURE LAW DIGEST

This digest provides only general information on aquaculture laws. The Ohio Administrative Code containing the details of these regulations is available for review at <http://codes.ohio.gov/oac/1501%3A31>. Regulations may be changed by the legislature and/or the chief of the Division of Wildlife with the approval of the Wildlife Council.

Aquaculture permits (Class A and B), Bait Dealer permits, and White Amur permits are issued annually by the Division of Wildlife through its district and Lake Erie offices and applications may be obtained from and returned to the following locations:

**Wildlife District One**  
1500 Dublin Road  
Columbus, OH 43215  
(614) 644-3925

**Wildlife District Two**  
952 Lima Avenue, Box A  
Findlay, OH 45840  
(419) 424-5000

**Wildlife District Three**  
912 Portage Lakes Drive  
Akron, OH 44319  
(330) 644-2293

**Wildlife District Four**  
360 E. State Street  
Athens, OH 45701  
(740) 589-9930

**Wildlife District Five**  
1076 Old Springfield Pike  
Xenia, OH 45385  
(937) 372-9261

**Sandusky Fisheries & Enforcement Units**  
305 E. Shoreline Drive  
Sandusky, OH 44870

- Class A & B species
- Unclassified species
- Prohibited species

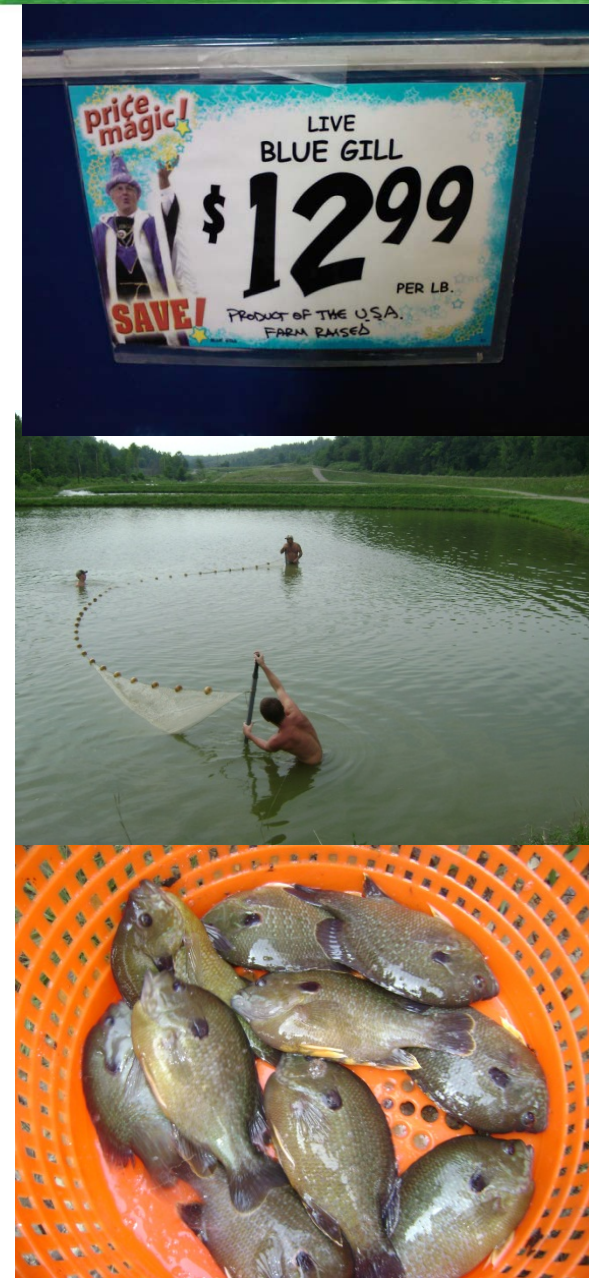
# Yellow Perch

- Ponds, cages, RAS,
- Fingerlings, pond stockers, food
- Takes 18 months to 8" market
- Optimum temp. 55 – 78 degrees F
- Stocking density 3000 lbs/acre
- High demand
- Gaps in production
  - Fingerling availability/price
  - Genetic selection (30-40% larger)
  - Sexual dimorphism
  - Nutrition
  - Year-round spawning



# Bluegill/hybrids

- Ponds, cages, RAS,
- Sold as pond stockers, food, bait
- Great tasting fillet
- Gaps in Production
  - Low dress-out (30%)
  - Sexual dimorphism
    - All-male populations
  - Fingerling availability
  - Nutrition
  - Marketing



# Freshwater Prawn (aka shrimp)

- Grown in ponds
- Sold for food (\$8.00 - \$15.00/lb)
- 100-day growing period (Jun – Sept)
- Must have good marketing
- Optimum temperature range is 77 – 90 degrees F
- Yields are 600 –1000 lbs/acre/year without substrate
- Gaps in production
  - Variable yields



# Trout

- Raceways, ponds, net pens, RAS
- Food and sport fish
- Optimum temp. 50 – 60 F
- Need lots of cold water
- Market size is from 0.5 to 1.5 lbs.



# Largemouth Bass

- Ponds, RAS
- Food and pond stocker
- Popular in Asian market
- Three year grow out
- Optimum growing temp. 55 – 80 degrees F
- Market size is from 1.25 to 2.5 lbs
- Possible paylake market!



# Tilapia

- RAS, cages, ponds
- Food – Live ethnic markets
- Algae control
- Warm water 80 – 87 F
- Mortality below 55 F
- Market size is 1.25 – 2.0 lbs.
- Competes with imported processed product
- Popular for aquaponics
- Hardy
- Poor dress-out for fillets



# Koi/Ornamentals

- Ponds, RAS, cages
- Goldfish 70 F, Koi 55 – 80 F
- Market size for goldfish is 1 – 6 inches, and koi 3 – 12 inches
- High value if you understand markings
- Backyard garden market follows economy



# Baitfish

- Ponds, RAS
- Entertainment, pond stocking
- Product sold live
- Minnows- Fathead, Chubs, Bluntnose
- Shiners- Spotfin, Golden
- Crayfish



# Catfish

- Ponds, cages
- Sold as pond stockers, food
- Warm water fish 80 – 85 F
- Market size 0.75 to 2.5 lbs
- Popular paylake fish
- Hard to compete with cheap catfish from the south



# Hybrid Striped Bass

- Ponds, cages, RAS
- Food, pond stocker
- A warm water fish that grow in 73 – 86 degree F water
- Market size from 1.5 – 3.5 lbs.
- Do not reproduce
- Fingerlings from Arkansas



# Walleye

- Ponds
- Popular food fish
- Popular pond stocker
- Mostly sold as fry or stocker size
- Grown in Minnesota and Wisconsin
- Hard to manage



# Paddlefish

- Large bodies of water > 5 acres
- Passive aquaculture
- Fillets and caviar
- Fillets=3 years
- Caviar=5-7 years
- Reservoir ranching
- Polyculture



# Aquatic Plants and Other

- Ornamental pond plants
- Frogs
- Tadpoles
- Snails



# Marine Shrimp

- RAS
- Possible Duo culture
- in Midwest now
- High energy cost
- Highest consumed seafood product

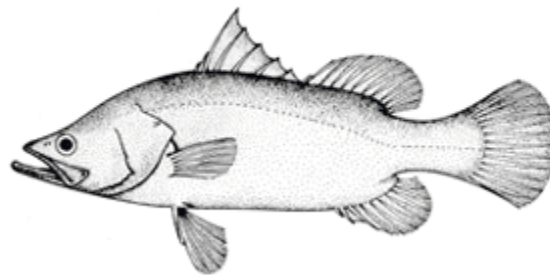


# Barramundi

- Known as Sea Bass in Asia
- Hardy species
- Harvest size 6 months- 2 years
- Feed train well
- Hatchery production relatively simple



FAO Names: En - Barramundi(=Giant seaperch), Fr - Perche barramundi, Es - Perca gigante



# Reality Check

- You must think about becoming vertically integrated (hatching to marketing)
- You must think about adding value
  - Niche markets
  - Processing
  - Agri-tainment
  - High value species



# Business Planning

- Very important
- Five years for profitable business
- Several on-line business plans
- We can help you develop a business plan.

# Contact Information

**Paul O'Bryant**

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## **OSU South Centers**

1864 Shyville Road

Piketon, OH 45661

740-289-2071

800-297-2072 (Ohio Only)

<http://southcenters.osu.edu/aqua>