

BULRUSHES AND BULRUSHLIKE PLANTS OF EASTERN NORTH AMERICA

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Aquatic Plants of Eastern North America

The importance of marsh and water plants to many kinds of wildlife- particularly waterfowl--makes ready identification of these plants of especial value to wildlife management workers. Descriptions and drawings of selected marsh and water plants are being issued in a series of pamphlets intended to help in identifying these plants, and in distinguishing between similar species. These notes are intended not only for the expert but also for the technician who has not specialized in plant taxonomy. The geographical range covered is approximately the eastern half of the North American continent north of Mexico.

Bulrushes and Bulrushlike Plants is the second pamphlet to be issued in this series; the first issued was Pondweeds and Pondweedlike Plants (May 1964).

BULRUSHES AND BULRUSHLIKE PLANTS OF EASTERN NORTH AMERICA

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BULRUSHES AND BULRUSHLIKE PLANTS OF EASTERN NORTH AMERICA

This is the second of a series of publications on the field identification of the marsh and water plants of eastern North America. It describes 19 bulrushes and 4 bulrushlike plants. Current manuals describe several other kinds of bulrushes that I consider to be only variations of those treated here. The manuals also include the following kinds that grow mainly in wet meadows, bogs, or swampy woods or in dry places: *Scirpus cespitosus*, *clintonii*, *divaricatus*, *fontinalis*, *hudsonianus*, *koilolepis* (*carinatus*), *lineatus*, *longii*, *peckii*, *polyphyllus*, *rollandii*, *sylvaticus* (includes *expansus* and *rubrotinctus*) and *verecundus* (see pages 266 to 276 in the eighth edition of Gray's Manual).

Bulrush seeds are important duck foods, and the rootstocks of some kinds are important goose and muskrat foods. In the north, diving ducks nest in stands of bulrushes that are broken by patches of water. In both the north and the south, such stands furnish house material and cover for muskrats and shelter for ducks.

Bulrushes are common in and along freshwater lakes, ponds, and streams from Manitoba to Nova Scotia and south to Missouri and Virginia, but are scarce farther north and south. Along the coast they are common in and along fresh, brackish, and salt bays and rivers from Nova Scotia to Texas.

Bulrushes vary from a few inches high to twice as tall as a man. Most of them grow in wet soil or shallow water and have stiff stems. Exceptions are Water Bulrush, with most of the stem and all of the hairlike leaves under water, and Alga Bulrush, with all of the limp stem under water. In some coastal waters, Softstem Bulrush, Southern Bulrush, and Common Threesquare are half-submerged at high tide. A few kinds of bulrush come up from seed each year, but most have long-lived rootstocks that perennially send up colonies of close-standing stems. The stems of most kinds die in winter, but in the south those of Southern Bulrush and Olney Threesquare often stay green.

Most bulrushes start to head out by early summer. The heads produce a tiny flower under each brown scale of their conelike spikelets; and each flower ripens a single seed that varies from the size of fine sand in Black Bulrush to 3/16 inch long in River Bulrush. Spikerushes and cyperuses also ripen one seed under each scale. Rushes (*Juncus*), however, produce small six-parted flowers, each of which ripens a pod filled with many tiny seeds.

The pictures of seed heads are life-size and show plants of average size and shape. The small habit pictures are about 1/30 life-size.

To identify a plant with this guide, first read pages 1-3, 7, 11, and 14, and scan the pictures. If the plant fits one of the groups outlined on page 2 and described in detail on a later page, look at the pictures of the plants of that group. If the plant looks like one of these pictures and unlike any other, and if it agrees with the accompanying description, you have identified it correctly.

The plants are described in five groups, according to whether they have

apparently leafless, rounded stems and open heads (p.3-6)

Hardstem Bulrush	Slender Bulrush
Softstem Bulrush	Needlerush
Southern Bulrush	Soft Rush

almost leafless, three-cornered or rounded stems and tight heads (p. 7-10)

Common Threesquare	Blunt Spikerush
Olney Threesquare	Bluntscale Bulrush
Torrey Threesquare	Sharpscale Bulrush

long leaves on three-cornered stems that are topped with heads of a few big spikelets (p. 11-13)

Saltmarsh Bulrush
Alkali Bulrush
River Bulrush

long leaves on three-cornered stems that are topped with heads of many small spikelets (p. 14-15)

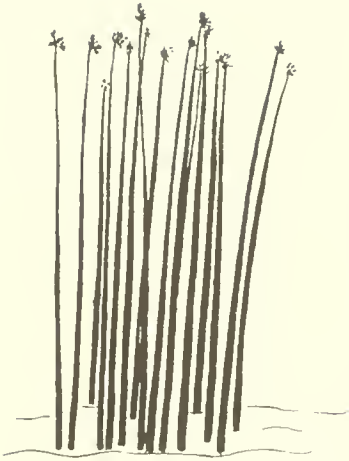
Black Bulrush
Woolgrass

characteristics unlike those of the preceding groups and unlike each other (p. 16-18)

Swamp Bulrush	Alga Bulrush
Seaside Bulrush	Tropical Bulrush
Water Bulrush	Shore Cyperus

PLANTS WITH APPARENTLY LEAFLESS, ROUNDED STEMS, AND OPEN HEADS

grow from knee-high to twice as tall as a man, and usually stand close together in colonies on wet ground or as much as waist-deep in fresh, brackish and alkali water. The stems of the bulrushes are several times as thick at the bottom as at the top. When mature, these stems are topped with an open head of few to many, oval or oblong spikelets that are 1/4 to 3/4 inch long. The ripe seeds are deep-gray and about 1/16 inch long. Needlerush and Soft Rush stems are only a little thicker at the bottom than at the top. When mature, their stems have a many-flowered head far below the top. The brownish or greenish flowers are less than 1/4 inch long, and their ripe pods are filled with brown seeds the size of fine sand.



HARDSTEM BULRUSH (*Scirpus acutus*)

Fresh and alkali marshes inland from British Columbia to Newfoundland, California, Texas and North Carolina; and fresh and brackish marshes along the Pacific coast and along the Atlantic south to Virginia.

Stems as tall as a man to much taller, usually dark-green and firm.

Resembles Softstem, Southern and Slender Bulrushes but the branches of the heads are stiff, not droopy.



SOFTSTEM BULRUSH
(*Scirpus validus*; includes *steinmetzii*)

Fresh marshes inland from Alaska to Newfoundland, California, Texas and Florida; and fresh and brackish marshes along each coast.

Stems waist-high to as tall as a man, usually grayish-green and very easily crushed between fingers.

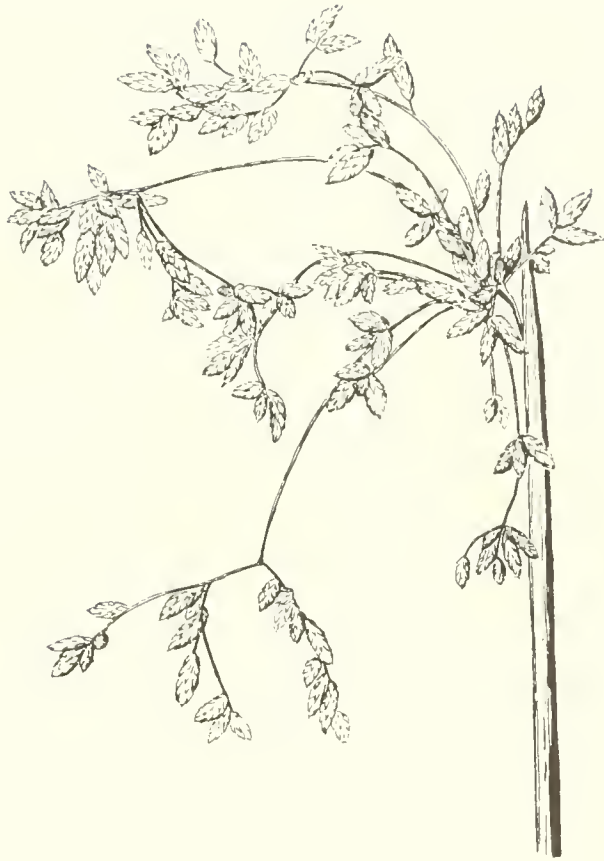
Resembles Hardstem Bulrush but the heads are droopy and have smaller spikelets. Resembles Southern Bulrush but most of the spikelets or clusters of spikelets have long stalks, and the stem is rounded. Resembles Slender Bulrush but many of the spikelets are in clusters.

SOUTHERN BULRUSH
(*Scirpus californicus*)

Fresh and alkali marshes inland from California to Arkansas, and in Florida; and fresh and brackish marshes along the California coast and along the southeast coast from Texas to South Carolina.

Stems as tall as a man to twice as tall, bluntly three-edged, usually dark-green and firm.

Resembles Softstem Bulrush but most of the spikelets have very short stalks and the stem is bluntly three-edged. Resembles Hardstem Bulrush but the heads are droopy and the stem is bluntly three-edged.



SLENDER BULRUSH
(*Scirpus heterochaetus*)

Fresh marshes in Washington, Idaho and Oregon; and from Montana to Quebec, Oklahoma, Illinois and New York.

Stems as tall as a man, usually dark-green and firm.

Resembles Hardstem and Softstem Bulrushes but the spikelets are by themselves on usually long stalks.

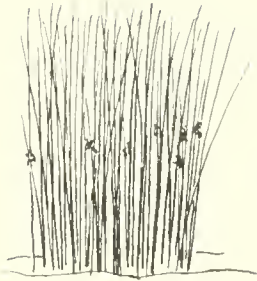


NEEDLERUSH
(*Juncus*
roemerianus)

Non-tidal and slightly tidal brackish and salt marshes from Texas to Maryland.

Dense, dark-green or dark-gray colonies of knee-high to shoulder-high stems and stem-like leaves look about the same the year around.

Stems and leaves resemble stems of Hardstem and Southern Bulrushes but are nearly as thin at the bottom as at the top and are needle-tipped.

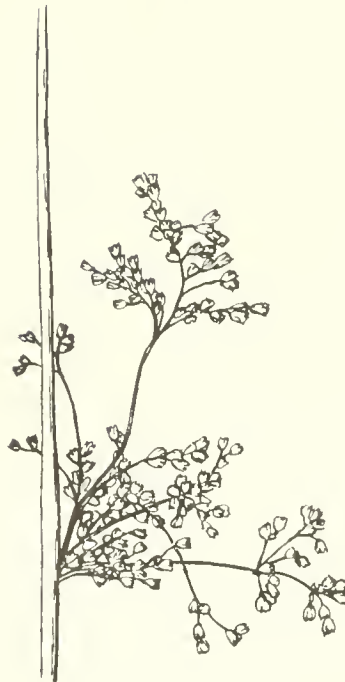
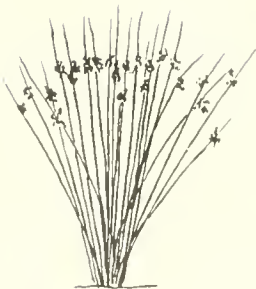


SOFT RUSH
(*Juncus effusus*)

Landward edges of fresh marshes from Alaska to Arizona; and Minnesota to Newfoundland, Texas and Florida.

Upright or spreading, close-growing or scattered clumps are knee-high to as tall as a man.

Stems resemble those of Softstem Bulrush but are nearly as thin at the bottom as at the top and usually are shorter and more clumped.



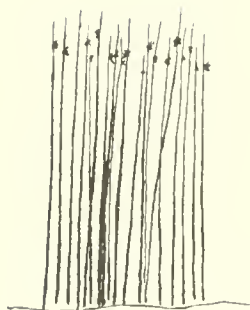
PLANTS WITH ALMOST LEAFLESS, THREE-CORNERED OR ROUNDED STEMS, AND TIGHT HEADS include the threesquares which come up each year from long-lived rootstocks and the clumped bulrushes which come up each year from seed. The threesquares usually stand close together--but not in clumps --in colonies that are knee-high to taller than a man, on wet ground or as much as knee-deep in fresh, brackish and alkali water. When mature, the stems have a tight head of a few oval or oblong spikelets on one side a little below the top. The spikelets are 1/4 to 3/4 inch long; the ripe seeds are brownish and from 1/16 to more than 1/8 inch long. Bluntscale Bulrush and Sharpscale Bulrush have seed heads similar to those of the threesquares, but their rounded stems grow in clumps that are usually less than knee-high, on wet ground or in no more than a few inches of fresh, brackish and alkali water. The spikelets are 1/8 to 3/4 inch long; the ripe seeds are blackish and about 1/16 inch long. Blunt Spikerush clumps are similar; but its mature stems have a single, oval or oblong seed head at the very top. Several other kinds of spikerush, looking only a little different, can be told apart by their seeds (see pages 252 to 259 in the eighth edition of Gray's Manual).

COMMON THREESQUARE
(*Scirpus americanus*)

Fresh, brackish and alkali marshes--usually in sandy soil--inland and along each coast from Alaska to Newfoundland, California, Texas and Florida.

Stems knee-high to as tall as a man.

Resembles Olney Threesquare but the stems have a long, sharp point and only slightly concave sides, and the spikelets are sharp-pointed. Resembles Torrey Threesquare but the stems have a sharp point and the spikelets are reddish-brown to dark-purplish-brown.



OLNEY THREESQUARE
(*Scirpus olneyi*)

Brackish marshes--usually in peaty soil--along the California and Atlantic coasts; alkali marshes from Washington to Wyoming, California and Texas; and in a few places in Michigan, Ohio and Missouri.

Stems knee-high to taller than a man.

Resembles Common Threesquare but the stems have a short, blunt point and deeply concave sides.



TORREY THREESQUARE
(*Scirpus torreyi*)

Fresh marshes from Manitoba to New Brunswick, South Dakota, Missouri and New Jersey.

Stems knee-high to waist-high.

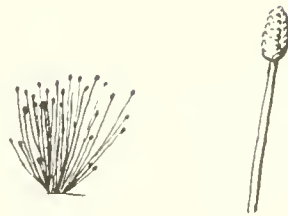
Resembles Common Threesquare but the stems have a blunt point and the spikelets are light-brown.



BLUNT SPIKERUSH
(*Eleocharis obtusa*)

On wet shores of lakes, ponds and streams from British Columbia to California; and from Minnesota to Nova Scotia, New Mexico and Florida.

Stems sprawling to upright, ankle-high to knee-high.

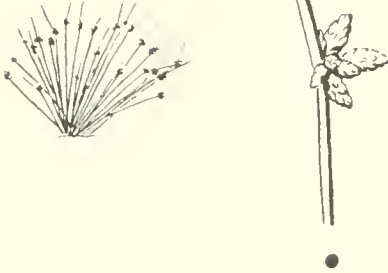


BLUNTSCALE BULRUSH
(*Scirpus smithii*; includes *debilis*
and *purshianus*)

On wet shores of lakes, ponds
and streams from Minnesota to Quebec,
Alabama and Georgia; maturing from
mid-summer to fall.

Stems sprawling to upright,
ankle-high to knee-high.

Resembles Sharpscale Bulrush
but has blunt scales which are not
ridged on the back, and shiny seeds.



SHARPSCALE BULRUSH
(*Scirpus supinus*; includes *hallii* and
saximontanus)

On wet shores of lakes, ponds and
streams from South Dakota to Ohio,
Texas and Florida; maturing from mid-
summer to fall.

Stems sprawling to upright, ankle-
high to shin-high.

Resembles Bluntscale Bulrush but
has sharp-pointed scales which are
ridged on the back, and dull seeds.



PLANTS WITH LEAFY, THREE-CORNERED STEMS, AND HEADS WITH A FEW BIG SPIKELETS grow from knee-high to as tall as a man, usually standing close together in colonies on wet ground or as much as knee-deep in fresh, brackish and alkali water. The sharply three-cornered stems have several long, flattish leaves that are a little wider than the stems. Mature stems are topped with an open or tight head of oval or oblong spikelets that are 1/2 inch to 1 1/2 inches long. The ripe seeds are brown and from 1/8 to 3/16 inch long. Stems and foliage of leafy, small-spikeleted bulrushes and a few kinds of carex are similar, but their heads are very different.



SALTMARSH BULRUSH (*Scirpus robustus*)

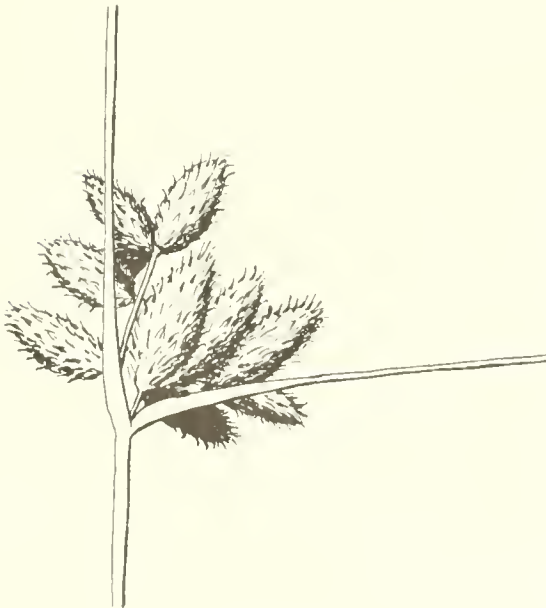
Brackish and salt coastal marshes--rare in Washington and California; common from New Brunswick to Texas.

Stems knee-high to shoulder-high.

Resembles Alkali Bulrush but has deep-brown spikelets with hook-tipped scales, and seeds which in end view are flat on one side and rounded on the other.

ALKALI BULRUSH

(*Scirpus maritimus*; includes *paludosus*)



Brackish and salt coastal marshes from British Columbia to California and from Quebec to New Jersey; brackish marshes in central New York; and alkali marshes in the western half of the continent, east as far as Northwest Territories, Minnesota and Texas.

Stems knee-high to shoulder-high.

Resembles Saltmarsh Bulrush but has straw-colored to medium-brown spikelets with bristle-tipped scales, and seeds which in end view have almost parallel sides.



RIVER BULRUSH (*Scirpus fluviatilis*)

Fresh marshes, both inland and coastal--rare from Washington to Saskatchewan, California and New Mexico; common from Manitoba to New Brunswick, Kansas and Virginia.

Stems waist-high to as tall as a man. In dried-out marshes often has no seed heads.

PLANTS WITH LEAFY, THREE-CORNERED STEMS, AND HEADS WITH MANY SMALL SPIKELETS grow from knee-high to as tall as a man, standing singly or in clumps, close together or scattered, on wet ground or in a few inches of fresh water. The bluntly or sharply three-cornered stems have several long, flattish leaves that are a little wider than the stems. Mature stems are topped with a usually open head of 100 to 1000 oval or oblong spikelets that are 1/8 to 1/4 inch long. The ripe seeds are yellowish and 1/16 inch long, or shorter. Stems and foliage of leafy, big-spikeleted bulrushes and a few kinds of carex are similar, but their heads are very different.



BLACK BULRUSH
(*Scirpus atrovirens*;
includes *georgianus* and
pallidus)

Landward edges of
fresh marshes from
Washington to Newfound-
land, Arizona, Texas
and Georgia.

Mature seed heads
are not droopy or
woolly, and are dull-
brown to greenish-black.



WOOLGRASS (*Scirpus cyperinus*;
includes *atrocinctus*, *eriphorum*, *pedicellatus*, and *rubricosus*)

Landward edges of fresh marshes from British Columbia to Newfoundland, Washington, South Dakota, Texas and Florida; maturing mostly from mid-summer to fall.

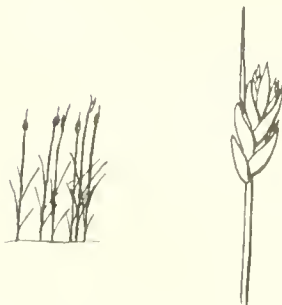
Mature seed heads are droopy and woolly, and usually light-brown.



SWAMP BULRUSH
(*Scirpus etuberculatus*)

Fresh marshes from Delaware to Louisiana; and in Missouri.

Three-edged stems with two or three long leaves near the bottom are waist-high to as tall as a man, and usually grow scattered.



SEASIDE BULRUSH
(*Scirpus rufus*)

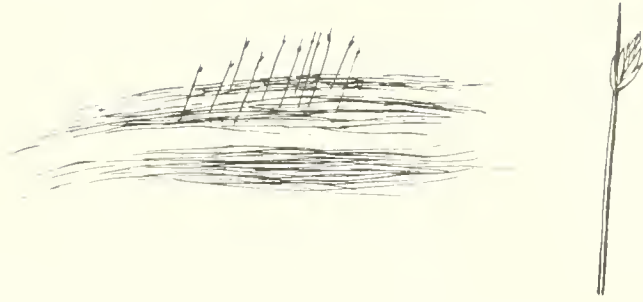
Brackish and salt marshes inland in Saskatchewan and Manitoba, and along the coast from Hudson Bay to New Brunswick.

Roundish stems are ankle-high to knee-high, and usually grow in patches. Heads are shiny purplish-brown and flattish.

WATER BULRUSH
(*Scirpus subterminalis*)

In as much as 5 feet of fresh water in lakes, ponds and slow streams from British Columbia to Oregon and Wyoming; and Minnesota to Newfoundland, Mississippi and Georgia.

Usually with many hairlike leaves trailing just under the surface of the water and the tops of a few roundish stems standing above it.

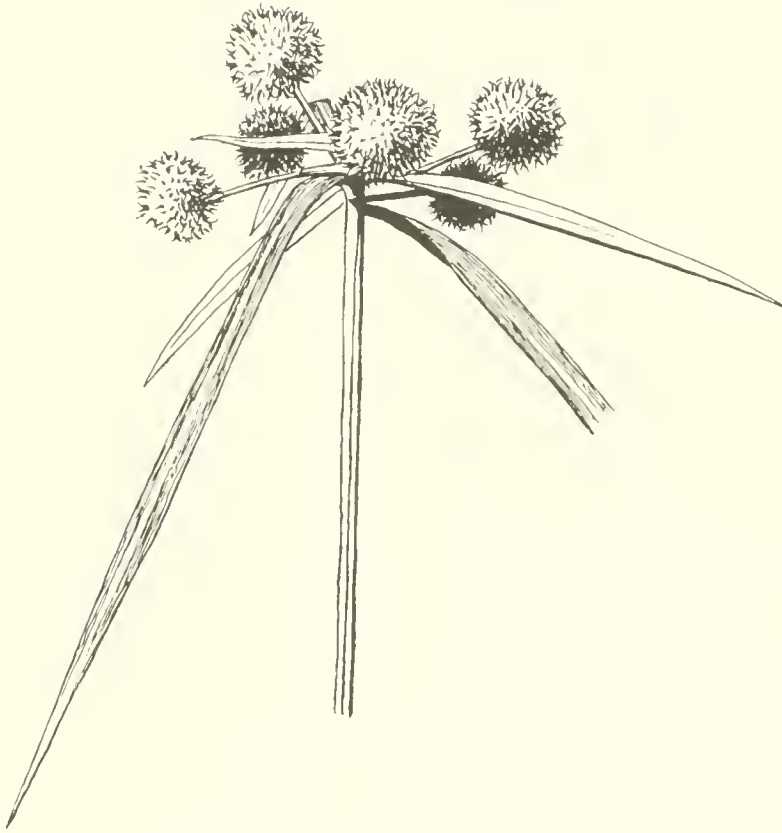


ALGA BULRUSH
(*Scirpus confervoides*;
formerly *Websteria*
submersa)

In shallow fresh water from Virginia to Florida.

Hairlike, branched stems up to 3 feet long grow in a tangle just under water. Usually is flowerless, but the top branches sometimes end in a narrow, spikerush-like seed head.





TROPICAL BULRUSH
(*Scirpus*
cubensis)

Fresh marshes, both inland and coastal, from Texas to Florida.

Sharply three-edged stems with several long leaves near the bottom are knee-high to thigh-high.

Reddish-green heads resemble those of some kinds of cyperus but the scales stick out in all directions.



SHORE CYPERUS
(*Cyperus aristatus*; formerly
inflexus)

On wet shores of lakes ponds and streams from British Columbia to New Brunswick, California, Texas and Florida; maturing from mid-summer to fall.

Stems are ankle-high or a little higher and usually grow in clumps. Scales are in one plane in two rows on each final branch of a head.

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NOTES

10/13/19

1. The first part of the notes discusses the general principles of the subject. It covers the basic concepts and the main results of the theory. The author provides a clear and concise explanation of the subject matter, making it accessible to a wide range of readers.

2. The second part of the notes deals with the application of the theory to specific cases. The author provides a detailed analysis of the various cases, showing how the theory can be used to solve practical problems. This part of the notes is particularly useful for those who are interested in the applications of the theory.

3. The third part of the notes discusses the current state of the subject and the directions for future research. The author provides a critical analysis of the existing literature and identifies the key areas that need further investigation. This part of the notes is essential for those who are interested in the development of the subject.

4. The fourth part of the notes provides a summary of the main results of the theory. The author presents the key findings in a clear and concise manner, making it easy for the reader to understand the overall picture. This part of the notes is particularly useful for those who are looking for a quick overview of the subject.

5. The fifth part of the notes discusses the historical development of the subject. The author provides a detailed account of the work of the major contributors to the theory, showing how the subject has evolved over time. This part of the notes is particularly useful for those who are interested in the history of the subject.

6. The sixth part of the notes provides a bibliography of the key references. The author lists the most important works in the field, providing a starting point for further research. This part of the notes is particularly useful for those who are interested in the literature of the subject.

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